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TRANSACTIONS

OF THE

MEDICAL SOCIETY

OF THE STATE OF

NORTH CAROLINA.

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FORTY-EIGHTH ANNUAL MEETING

HELD AT

DURHAM, N. C.

MAY 21, 22, AND 23, 1901.

CHARLOTTE. N. C.
Queen City Printing and Paper Co.
1901.

Publication Committee.

GEO. W. PRESSLY, Charlotte, Chairman.
JOHN C. MONTGOMERY, Charlotte.
ROBERT L. GIBBON, Charlotte.
W. H. WAKEFIELD, Charlotte.

ROSTER OF OFFICERS

—OF THE—

MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA.

	DATE.	PLACE.	PRESIDENT.	VICE-PRESIDENTS.	SECRETARY.	TREASURER.
	1849	Raleigh.	**F. J. Hill.**		W. H. McKee.	
1	1850	"	**Edmund Strudwick.**	F. J. Haywood, C. E. Johnston, J. E. Williamson, W. G. Thomas.	"	W. G. Hill.
2	1851	"	**Edmund Strudwick.**	C. E. Johnston.	"	"
3	1852	Wilmington.	**J. E. Williamson.**	Thos. N. Cameron, Wm. G. Hill, Johnston B. Jones, N. J. Pittman.	E. B. Haywood.	J. J. W. Tucker.
4	1853	Fayetteville.	"	W. G. Hill, Johnston B. Jones, J. B. G. Myers, N. J. Pittman.	W. W. Harris.	Daniel Dupree.
5	1854	Raleigh.	**J. H. Dickson.**	N. J. Pittman, J. G. B. Myers, J. Graham Tull, A. D. McLean.	S. S. Satchwell.	"
6	1855	Salisbury.	"	J. Graham Tull, Owen Hadley, A. D. McLean, Hugh Kelly.	"	J. B. Dunn.
7	1856	Raleigh.	**C. E. Johnson.**	Marcellus Whitehead, E. R. Gibson, Johnston B. Jones, O. F. Manson.	"	"
8	1857	Edenton.	"	Marcellus Whitehead, O. F. Manson, H. W. Faison, E. T. Gibson.	W. G. Thomas.	"
9	1858	Newbern.	**W. H. McKee.**	Edward Warren, C. W. Graham, Caleb Winslow, A. B. Pierce.	"	"

ROSTER OF OFFICERS OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA.

10	1859	Statesville.	**W. H. McKee.**	Jas. G. Ramsay, J. R. Mercer,	P. E. Hines, W. T. Howard.	W. G. Thomas.	C. W. Graham.
11	1860	Washington.	**N. J. Pittman.**	P. T. Henry, M. Whitehead,	R. H. Winborne, T. S. Leach.	"	"
12	1861	Morganton.	"	J. J. Summerell, G. W. Hodges,	C. T. Murphy, W. A. B. Norcom.	"	"
13	1866	Raleigh.	**J. J. Summerell.**			"	"
14	1867	Tarboro.	**W. G. Thomas.**	E. Burke Haywood, W. L. Barrow,	R. H. Winborne, J. W. Jones.	S. S. Satchwell.	"
15	1868	Warrenton.	**S. S. Satchwell.**	Hugh Kelly, Chas. J. O'Hagan,	Geo. A. Foote, J. H. Baker.	Thos. F. Wood.	J. W. Jones.
16	1869	Salisbury.	**E. Burke Haywood.**	Thos. E. Wilson, C. T. Murphy,	A. B. Pierce, M. A. Locke.	"	"
17	1870	Wilmington.	**C. J. O'Hagan.**	E. A. Anderson, W. R. Sharpe,	F. N. Luckey, R. L. Payne.	"	
18	1871	Raleigh.	**Hugh Kelly.**	D. N. Patterson, J. B. Seavy,	R. C. Pearson, G. L. Kirby.	"	"
19	1872	Newbern.	**W. G. Hill.**	H. W. Faison, G. H. Macon,	R. I. Hicks, W. A. B. Norcom.	Jas. McKee.	"
20	1873	Statesville.	**M. Whitehead.**	W. T. Ennett, Chas. Duffy,	William Little, T. P. German.	"	H. T. Bahnson.

21	1874	Charlotte.	**W. A. B. Norcom.**	J. B. Jones, C. G. Cox,	R. F. Lewis, J. L. Knight.	Jas. McKee.	H. T. Bahnson.
22	1875	Wilson.	**J. W. Jones.**	Walter Debnam, Wm. Little,	J. A. Gibson, D. N. Patterson.	"	"
23	1876	Fayetteville.	**Peter E. Hines**	Jos. H. Baker, T. D. Haigh,	G. G. Smith, J. K. Hall.	"	"
24	1877	Salem.	**Geo. A. Foote.**	J. K. Hall, A. Holmes,	B. W. Robinson, A. A. Hill.	"	A. G. Carr.
25	1878	Goldsboro.	**R. L. Payne.**	E. M. Rountree, S. B. Flowers,	Richard Anderson, L. A. Stith.	L. J. Picot.	"
26	1879	Greensboro.	**Chas. Duffy, Jr.**	J. A. Gibson, Jas. McKee,	Willis Allston, A. A. Hill.	"	"
27	1880	Wilmington.	**J. F. Shaffner.**	J. K. Hall, W. R. Wilson,	W. C. McDuffie, R. F. Lewis.	"	"
28	1881	Asheville.	**R. B. Haywood.**	J. A. McRee, R. H. Speight,	W. H. Lilly, W. J. H. Bellamy.	"	"
29	1882	Concord.	**Thos. F. Wood.**	T. J. Moore, S. E. Evans,	D. J. Cain, Jno. McDonald.	"	"
30	1883	Tarboro.	**J. K. Hall.**	A. W. Knox, E. S. Foster,	J. M. Hadley, Jno. Whitehead.	"	"
31	1884	Raleigh.	**A. B. Pierce.**	F. W. Potter, R. Dillard,	G. W. Graham, G. W. Long.	"	"

ROSTER OF OFFICERS OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA.

32	1885	Durham.	**W. C. McDuffie.**	Jas. McKee, W. H. Whitehead,	T. E. Anderson, A. G. Carr.	W. C. Murphy.	R. L. Payne, Jr.
33	1886	Newbern.	**Jos. Graham.**	H. T. Bahnson, J. L. McMillan,	L. J. Picot, W. W. Faison.	J. M. Baker.	C. M. Poole.
34	1887	Charlotte.	**H. T. Bahnson.**	G. G. Smith, C. M. Poole,	J. L. Nicholson, H. B. Ferguson.	"	"
35	1888	Fayetteville.	**T. D. Haigh.**	W. T. Ennett, T. E. Anderson.	J. A. Dunn,	"	"
36	1889	Elizabeth City.	**W. T. Ennett.**	W. J. Jones, G. W. Long.	S. W. Stevenson,	"	"
37	1890	Oxford.	**G. G. Thomas.**	R. L. Payne, Jr., S. W. Booth.	Richard Dillard,	J. M. Hayes.	"
38	1891	Asheville.	**R. H. Lewis.**	S. W. Battle, W. H. Lilly.	J. L. Nicholson,	"	M. P. Perry.
39	1892	Wilmington.	**W. T. Cheatham.**	T. S. Burbank, W. H. H. Cobb,	J. W. Long, W. D. Hilliard.	"	"
40	1893	Raleigh.	**J. W. McNeill.**	W. C. Galloway, J. M. Hadley,	H. H. Harris, Thos. Hill.	R. D. Jewett.	"
41	1894	Greensboro.	**W. H. H. Cobb.**	J. A. Hodges, Willis Alston,	R. W. Tate, M. H. Fletcher,	"	"
42	1895	Goldsboro.	**J. H. Tucker.**	J. H. Way, O. McMullan,	W. H. Harrell, C. A. Misenheimer.	"	"

43	1896	Winston-Salem.	**R. L. Payne.**	S. D. Booth, J. A. Burroughs,	J. P. Munroe, J. E. Grimsley.	R. D. Jewett.	M. P. Perry.
44	1897	Morehead City.	**P. L. Murphy.**	J. C. Walton, M. R. Adams,	A. A. Kent, B. L. Long.	"	"
45	1898	Charlotte.	**Francis Duffy.**	E. C. Register, J. B. H. Knight,	A. T. Cotten, F. H. Russell.	"	"
46	1899	Asheville.	**L. J. Picot.**	I. W. Faison, H. H. Dodson,	J. W. White, W. C. Brownson.	Geo. W. Pressly.	G. T. Sikes.
47	1900	Tarboro.	**Geo. W. Long.**	C. M. Poole, T. B. Williams,	James M. Parrott, W. D. Hilliard.	"	"
48	1901	Durham.	**Julian M. Baker.**	M. H. Fletcher, D. A. Stanton,	C. A. Julian, E. M. Summerell.	"	"

BOARD OF MEDICAL EXAMINERS OF THE STATE OF NORTH CAROLINA.

JAMES H. DICKSON, Wilmington	1859–1866
Charles E. Johnson, Raleigh	1859–1866
Caleb Winslow, Hertford	1859–1866
Otis F. Manson, Townsville	1859–1866
Wm. H. McKee, Raleigh	1859–1866
Christopher Happoldt, Morganton	1859–1866
J. Graham Tull, Newbern	1859–1866
SAMUEL T. IREDELL, Secretary	1859–1866
N. J. PITTMAN, Tarboro	1866–1872
E. Burke Haywood, Raleigh	1866–1872
R. H. Winborne, Edenton	1866–1872
S. S. Satchwell, Rocky Point	1866–1872
J. J. Summerell, Salisbury	1866–1872
R. B. Haywood, Raleigh	1866–1872
M. Whitehead, Salisbury	1866–1868
J. F. Shaffner, Salem	1868–1872
WM. LITTLE, Secretary	1866–1872
CHAS. J. O'HAGAN, Greenville	1872–1878
W. A. B. Norcom, Edenton	1872–1878
C. Tate Murphy	1872–1878
Geo. A. Foote, Warrenton	1872–1878
J. W. Jones, Tarboro	1872–1878
R. L. Payne, Lexington	1872–1878
CHAS. DUFFY, JR., Newbern	1872–1878
P. E. HINES, Raleigh	1878–1884
T. D. Haigh, Fayetteville	1878–1884
R. I. Hicks, Williamsboro	1878–1880
Geo. L. Kirby, Goldsboro	1878–1884
Thos. F. Wood, Wilmington	1878–1884
Jos. Graham, Charlotte	1878–1884
H. T. BAHNSON, Salem	1878–1884
R. H. Lewis, Raleigh	1880–1884
WM. R. WOOD, Scotland Neck	1884–1890
A. W. Knox, Raleigh	1884–1890
Francis Duffy, Newbern	1884–1890
P. L. Murphy, Morganton	1884–1890
Willis Alston, Littleton	1884–1890
W. J. H. BELLAMY, Wilmington	1884–1890
J. A. Reagan, Weaverville	1884–1890
R. L. Payne, Jr., Lexington	1890–1892
Geo. W. Purefoy, Asheville	1890–1892
Geo. G. Thomas, Wilmington	1890–1894
Robt. S. Young, Concord	1890–1894
Geo. W. Long, Graham	1890–1896
W. H. WHITEHEAD, Rocky Mount	1890–1896
L. J. PICOT, Littleton	1890–1896
JULIAN M. BAKER, Tarboro	1892–1898
H. B. WEAVER, Asheville	1892–1898
T. S. Burbank, Wilmington	1894–1898
J. M. Hayes,* Greensboro	1894–1897
D. T. TAYLOR, Washington	1896–1902
R. H. Whitehead, Chapel Hill	1896–1897
THOS. E. ANDERSON, Statesville	1896–1902
Kemp P. Battle, Raleigh	1897–1900
W. H. H. Cobb, Goldsboro	1898–1900
J. HOWELL WAY, Waynesville	1897–1902
Albert Anderson, Wilson	1898–1902
E. C. REGISTER, Charlotte	1898–1902
T. S. McMullan, Hertford	1900–1902
J. C. Walton, Reidsville	1900–1902

*Service on Board terminated by death in May, 1897.

NOTE.—The names of members who served as President appear in CAPS; of those who served as Secretary in SMALL CAPS.

OFFICERS AND COMMITTEES

For 1901.

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JULIAN M. BAKER, Tarboro.

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D. A. STANTON, High Point,
E. M. SUMMERELL, Mill Bridge.

SECRETARY.

GEO. W. PRESSLY, Charlotte.

TREASURER.

G. T. SIKES, Grissom.

ORATOR.

EARL GRADY, Tryon.

ESSAYIST.

R. S. PRIMROSE, Newbern.

LEADER OF DEBATE.

D. A. STANTON, High Point.

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W. P. BEALL, Greensboro.

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J. C. RODMAN, Washington.

OFFICERS AND COMMITTEES.

For 1902.

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ROB'T S. YOUNG, Concord.

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GEO. W. PRESSLY, Charlotte.

TREASURER.

G. T. SIKES, Grissom.

ORATOR.

JOHN C. RODMAN, Washington.

ESSAYIST.

EUG. B. GLENN, Asheville.

LEADER OF DEBATE.

A. A. KENT, Lenoir.

BOARD OF CENSORS.

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OSCAR MCMULLAN, Elizabeth City.

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ABNER ALEXANDER, Columbia, C. M. POOLE, Craven,
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OBITUARY COMMITTEE.

E. G. MOORE, Elm City, JOHN M. MANNING, Durham,
J. A. BURROUGHS, Asheville.

PRESIDENT'S ADDRESS.

By JULIAN M. BAKER, Tarboro, N. C.

Members of the Medical Society of the State of North Carolina:

The first meeting upon the threshold of the new century, and the second half century of the Society's existence, is a suitable occasion for congratulation that medicine is now a science, and, in this progressive age of the world's history, is keeping pace with the development which characterizes other branches of human knowledge. The superstition, dogma and ignorance which has marked every era in its history, has given place to truth, to close and accurate investigation of nature's laws, resulting in an intelligent, earnest, scientific application of them to the accomplishment of the objects sought.

We congratulate ourselves, too, that in the great advancement in civilization and enlightenment, in scientific achievement, in the consummation of great undertakings which mark the century just past, no insignificant part has been played by the profession to which we belong, and that this Society, in the half century of its existence, has been a factor in this march of progress. It has exercised an influence in shaping the history and destiny of our people. Its impress has been felt upon individual character and upon the State. Its efforts have been to alleviate human suffering, to upbuild mankind, for the elevation of professional character, and the advancement of science.

While this is true, while much has been accomplished in the past, that degree of perfection to which we aspire is not yet reached; much yet remains to be done before our destiny is fulfilled. My distinguished predecessors have from year to year suggested for your consideration various plans for the welfare of the Society and the profession, many of which have found fruition in the very desirable and almost perfect condition of the laws of the State regulating the practice of medicine, and in the exceptional high standard of requirement of the Board of Medi-

cal Examiners. Very few, if any, amendments are needed to the laws; the standard of requirement cannot be raised much higher than it is under existing conditions. Our effort should be to emphasize the position already attained, to enforce the laws already enacted, and to maintain the standard already established. To do this, to increase the usefulness and importance of the Society in the State, it is suggested that some measures be adopted that will increase the membership and create additional interest in our annual meetings, thereby increasing the attendance. Since the organization of the Society in 1849 with a membership of 25, the number has increased until in 1901 it is about 500. In 1867, the date of reorganization after the war, the membership was 228. Whether this bore a larger ratio to the number of physicians then in the State, we have no means of ascertaining. We believe the proportion was larger then than now, when there are 1,600 physicians in the State, and only 500 members of the Society. There are at least 500 physicians in the State whose membership is desirable, who are not connected with the Society. Since 1895 there have been 201 new names added to the roll. The average attendance for the past five years has been 183. While new names are being added old members are dropping out, the death rate has been small, the largest number dropping out for non-payment of dues. Some means must be devised by which the old members can be retained as well as new ones added.

The enforcement of the medical laws can be accomplished only in those communities which have been educated to the conviction that they are necessary for the protection of the people and the general welfare. None exercise so potent an influence in shaping public sentiment along this line as the members of the medical profession. Every name on the roll means one more to co-operate in furthering the objects and purposes of the Society. Violations of the law are more numerous and more openly defiant now than ever before, and some means must be devised to punish the offenders. The difficulties confronting an effort of this sort, on the part of the profession, are chiefly the reluctance to take an active part for fear of being charged with an improper motive, and, in case of failure to convict, the

reaction is in favor of the one prosecuted, who poses as a martyr to the jealousy of the physician instigating the prosecution. Another difficulty is the arbitrary construction of the law given by each Judge before whom the cases are tried. What constitutes the practice of medicine and surgery as contemplated in the act seems to be the feature which is causing the most perplexity. The law should be so amended as to define "The practice of medicine and surgery." It should be written on the statute books so plain and in such unmistakable terms, that the mere administration of drug of some one else's compounding should not be the only prohibitory act applicable to itinerant quacks, osteopaths, faith curists, Christian scientists, magnetic healers and all that class of harpies which have of late been swarming into the State. The practice of medicine and surgery should be defined to be, what it is, "The practice of the art of healing," "The science of the preservation of health and of treating disease for the purpose of cure," just as it is defined in the dictionary, and just as it is in reality. Should this amendment be made to the law, there would be no further license by judicial decision of so-called doctors under the title of osteopath, curist or scientist, of various degrees of quackery. It is earnestly desired that you take some action in this matter. Admitting that it is necessary for the welfare of the Society, that its usefulness should be increased and its benefits extended, some means of increasing the membership must be devised, something must be done to increase interest in the annual meetings, and this amendment to the medical law must be secured. How can these objects be accomplished? It is suggested and recommended for your favorable consideration that, as a preliminary, encouragement should be given the organization of County Medical Societies under the auspices of the State Medical Society. When the Constitution was amended a few years ago and the County Society destroyed, a step backward was taken; instead of abolishing them, means should have been devised for making them more efficient in organization and scientific work. Wherever a well conducted and working County Society exists, the State Society has a valuable auxiliary in every undertaking, and an enthusiastic, regular and valuable attendance at the

annual meetings from its membership. What is more potent in influencing public opinion in favor of the plans and purposes of this Society than an organized body of active and intelligent supporters in each county in the State? At its stated meetings opportunity would be offered for scientific disscussion, social intercourse, and the cultivation of an esprit de corps which would have its natural outlet in fostering and encouraging the desire to attain membership in the parent body. Some provision might be made by which members of these County Societies might become members of the State Society upon proper recommendation, upon payment of dues, etc; such membership might carry with it a subscription to the official organ, provided, you should decide that such action was desirable.

It is argued against the County Society that petty jealousies and disagreements of local competitors are sure, sooner or later, to arise and make the maintenance of the Society impossible. Doubtless, this would be true in many instances, but even should the County Society disband for such cause, membership in the State Society might be retained, and in all instances these unfortunate conditions would not arise. With a well organized, active Society, the enforcement of the law would not be so difficult, and the tendency would be to increase both the membership and the attendance at the annual meeting.

As a further means of adding to the interest of the annual meetings, it is suggested that more time be given to scientific discussion and less to routine business. As part of this program, it is recommended that each chairman of Section and the leader of debate be required to signify his willingness to perform the duties, and to assure him that the appointment is not intended as an idle compliment, but that the scientific work and interest of the meeting will depend upon his efforts. If he is unwilling to give such assurance, then some one else should be appointed. It might be well, also to select some distinguished member of the profession from abroad to address each meeting on a subject of general interest.

It is recommended for your consideration that a fund of $1,000.00 be raised and invested to be known as "The Prize Fund of the Medical Society of the State of North Carolina."

That this entire fund be awarded to the member of this Society who shall make an original discovery which shall prove of lasting benefit to humanity, said award not to be made until five years after the announcement of the discovery. This would stimulate the younger, as well as the older members, to increased effort along the line of original research, with the assurance of lasting and enduring fame as well as material gain, to crown success. Should the discoverer die before the determination of the value of discovery, provision should be made to pay the fund to his dependents under certain conditions.

These suggestions are made with the idea of simply directing your attention to some of the needs of the Society. Doubtless, many other measures which would promote its welfare will occur to you during the session.

In conclusion, gentlemen, let me thank you for the honor conferred in calling me to preside over your honorable body, to be elevated to a position once so ably filled by the two Haywoods, Pitman, Thomas, Satchwell, Wood and O'Hagan who are numbered among our honored dead, and in later years by Lewis, Thomas, Murphy, Payne, Picot and Long, is a distinction which no one could fail to appreciate. Coming to me, as it did, at my own home, among my own people, I assure you words cannot express my sense of gratitude for this evidence of your confidence and esteem. Gentlemen, I thank you again.

Report of the Section on Practice of Medicine.

Antitoxin, Animal Extracts and Serums.

By H. T. BASS, M. D. Tarboro, N. C., Chairman.

Mr. President:

I am deeply grateful for the honor conferred on me by being made your chairman of the Section on the Practice of Medicine, and I promised myself that I would search the literature of practical medicine and compile a paper that would be entertaining and at the same time instructive, to this body, but I shall fall short of it, for I find it to be a greater task than I at first thought, and the honor should have fallen into more competent hands.

The opening of the section with an address carries with it certain responsibilities, for in a measure I am but the spokesman, and my utterances are the work of others. The Chairman of each section is expected to prepare an address on the recent advances in the branch belonging to this section. This I have only in a partial way endeavored to do, for the work is of such large dimensions, owing to the large number of drugs and chemicals that the pharmacists and chemists have added to our materia medica, and which the profession has applied to the treatment of diseases. I will confine my remarks to some of the animal serums, antitoxins, and extracts, and their application in medicine.

The chief interest in therapeutics and practice of medicine

during the year has been in the experiments and investigations in animal serums and extracts. It is too soon to even predict the extent to which this treatment will develop, but from the various lines on which the investigators are working, it seems probable, if they are successful, that the whole field of medicine will become involved, and our materia medica will in the future consist largely of antitoxins, and extracts with the method of their preparation and administration. Diphtheria, typhoid fever, tetanus, septicæmia, (embracing erysipelas and puerperal fever,) pneumonia, typhoid fever, yellow fever, leprosy, plague, cholera, tuberculosis, cancer, rabies, snake bite, and anthrax, are already on the list, and in the very near future we may have many more to add. Most of the above named diseases, according to the bacteriologists have their distinct toxine. It is now generally recognized by the medical profession that in diphtheria the injection of the antitoxin serum gives better results than any other mode of treatment, and has lowered the mortality in a marked degree. Antitoxin is now used in all hospital practice, but judging from the mortality in the large towns, and country districts, it does not seem to be used by the general practitioner, as it should be. With the statistics before us, the medical man who does not use antitoxin in a case of diphtheria, if not criminally responsible, is almost so. Dr. Edwin Rosenthal, in an article read at the last annual meeting of the American Medical Association, states that he received replies to inquiries made of the physicians from one hundred and fifty cities in this and other countries, and compiled the following statistics: Number of cases of diphtheria previous to the serum treatment, 183,256, with a mortality of 38.4 per cent. Number of cases since the antitoxin period, 132,-546, with a mortality of 14.6 per cent., and he further states that all of the above cases were not treated with the serum, and in compiling the cases treated with the serum alone the mortality was 9.8 per cent. In an investigation made by the American Pedriatic Society, of 615 physicians, 600 were strongly in favor of the antitoxin, and the mortality was 4.8 per cent. in the cases they had treated with the antitoxin during the first three days of the disease.

I have treated only one case of diphtheria with antitoxin. Called to see Mary M.; found her with fever; temp. 104.5, coated tongue, restless, sore throat with membrane. Gave her Hyd. Chlo. Mit. with Quin., Sulph. and an antipyretic. The next morning gave 10 c. c. of H. K. Mulford's antitoxin; the fever dropped to 102 within six hours. I then gave 10 c. c.; the fever rose 103 during the next four hours; I then gave 10 c. c.; the fever dropped and never went above 101 again. The antitoxin was given every 4 to 6 hours in 10 c. c. injections until 80 c. c. was given in all. The wipings of the throat were examined and the diagnosis was confirmed. Hydrogen peroxide, Lofftin's antiseptic throat solution was used locally, and internally Tinct. Chlo. Pot. and Tinc. Ferri chlorid. The case recovered.

TETANUS.

In the laboratory where the amount of tetanus toxine in known, and the antitoxin serum is given, it acts nicely; but, in the human being where the amount of toxin is not known, it has not done so well. Yet, it should be used in all cases. Stentzing states that, in 96 cases treated with antitoxin, 35 recovered. Behring gives it not later than the 26th hour, and recent experiments have shown that the antitoxin prevents further infection, but it cannot cure after the infection has reached the spinal cord and brain. In the Medical Record three cases are cited by Wilms, treated according to the time and rule of Behring, all fatal on the 3rd, 4th and 6th days, and the course of the disease did not seem to be affected in any way. The dose should be large, and a prophylactic injection of 500 units should be given immediately after the first symptom.

ERYSIPELAS.

Antitoxin, or rather, antistreptococcus serum, is being used with good results for erysipelas, according to Anderson and Roberson; also Harrison and Anderson speak favorably of its use. I will cite only one case that fell under my care. Called to see Mrs.

M., aged 67; found her with erysipelas of the nose and cheek; temp. 104, stomach irritable, and she was very much prostrated. I gave her an injection of 10 c. c. of antitoxin; within six hours the temp. had fallen to 102; repeated the injection, four hours later; the temp. was 103; gave 10 c. c. of the antitoxin again. Six hours later temp. was 101, and all the other symptoms were better, yet the erysipelas extended over the face and head. I continued the antitoxin every six hours until I gave six bottles of H. K. Mulford's antitoxin, 10 c. c. each. The case gradually improved. The antitoxin was the only medicine used internally. Locally 33⅓ per cent. of icthyol in lanolin was used.

PUERPERAL SEPTICÆMIA.

Antitoxin in puerperal septicæmia is still on trial. Prof. B. C. Hirst said to an inquiry, "I have given the antitoxin of streptococcic infection an extensive trial, but have not been pleased with it." The report of a committee on the subject published in the American Journal of Obstetrics for 1899, was not favorable to the antitoxin, and there has been nothing since to change the opinion. Henry J. Garrigue, in an address before the County Medical Society of New York last December, said the profession had apparently proven the Antistreptococcic serum not only useless but harmful. I used it in one case with apparently good result. Mrs. C., aged 26, puerperal sepsis on the fifth day after confinement. Temp. 105. Injected 10 c. c. antitoxin; six hours later temp. 102; repeated the injection; temp. six hours later 102.5. Repeated the injection; temp. 101, six hours later, repeated it every six hours thereafter until six bottles were taken, 10 c. c., each. The womb was curetted and antiseptic washes given with food and stimulants; patient recovered.

PNEUMONIA.

Washburn, Pain and others report favorable results from antipneumococcic serum in pneumonia. Prof. T. R. Brown, in a paper read before the Clinical Socity, of Baltimore, December 7th, 1900, reviewed the subject of antitoxin serums in pneu-

monia, and compiles 72 cases with 4 deaths, a per cent. of 5.5, and also cites the statistics from other investigators not so favorable to the serum. Tolamon, in the French Journal of Medicine and Surgery, February, 28th, 1901, gives the statistics of 50 cases treated with the serum, with 7 deaths, 14 per cent., and under other treatment in the year 1899 the per cent. of deaths was 37. To a question asked Prof. James Tyson in regard to the antitoxin, he said, "I am using the anti-pneumococcic serum whenever I get a chance; but I feel that I have not used it sufficiently to justify any conclusions, except that it is perfectly harmless and may be used fearlessly." Prof. J. C. Wilson, in a paper read before the American Medical Association, June 5th, 1900, in Atlantic City, on serum-therapy in croupous pneumonia, reviewed the subject fully up-to-date. He cites 18 cases treated in the German Hospital, Philadelphia, with four deaths, 22.2 per cent. The statistics mentioned above, and the large per cent of mortality in pneumonia, should at least make us watch closely the future work in the field. The results obtained up to the present time are, in many respects, unsatisfactory, yet, they are at least promising. I used it in one case, Mr. M., age 51; at the time of giving the serum he was unconscious; respiration 50, pulse 150, temperature 106; skin dry, lips and tongue parched. Gave injection of 20 c. c. H. K. Mulford's serum; the pulse improved in character, respiration fuller and skin moistened, 2½ hours after first injection temp. 106, repeated injection. Saw the patient 7 hours after the second injection and found temperature 108, respiration 50, pulse 150, skin acting freely. Repeated the injection; patient died within half an hour. I will say I had no hope for the patient, but the label around the bottle containing the serum recommended it in just such cases, and I gave it.

YELLOW FEVER.

Sanarelli's antitoxin in yellow fever is used, and good results are claimed for it by the professor, and his experience is being confirmed by others. Sixty-six per cent. of the total number

treated recovered. Sanarelli recommends that 150 c. c. be given at a dose, and that part be put in the vein and part under the skin. The average dose is 20 to 65 c. c. and repeated every six to twelve hours.

TYPHOID FEVER.

Typhoid fever is treated with the cultures of serum with favorable results. There was 75 per cent. less typhoid fever among the soldiers inoculated in South Africa by Prof. Wright, of Netley, than there was among those not inoculated. Andres, in his last book, on page 62, cites E. Faukel and Maunchot as having treated 57 cases of typhoid fever with cultures of serum with favorable results. Jez. M. Wiener (Med. Wochen, page 345), cites 18 cases treated with anti-typhoid serum, or extract, with good results, the pyrexia becoming remittent, the pulse less and stronger, the tongue cleaned off, and the disease shortened. Dose, teaspoonful to tablespoonful every two hours. The subject is being investigated and there has been no final opinion rendered in favor of protective inoculation. The latest statistics by Prof. A. E. Wright, of Netley, in *The Lancet* of February, 1901, page 399, out of 539 officers, men and women in the 15th Hussars at Meerut, India, 360 were inoculated in England against typhoid fever; (2) 0.55 per cent. contracted the fever, with (1) death 0.27 per cent., but of 179 not inoculated (11) 6.14 per cent. contracted the fever with 6 deaths, 3.35 per cent. The above figures warrant the conclusion that the protective inoculation was the cause of the difference, in some degree, at least.

LEPROSY.

In leprosy, Koch's tuberculin was tried and failed to be of any good. Beavan and Rake, among others, say that antagonistic inoculation is practically a failure in its results.

PLAGUE.

In plague, Prof. Colmeth is said to have gotten admirable results both prophylactic and curative with serum from the Pas-

teur Institute, but more recent reports by Haffkins are not so encouraging for the serum.

RABIES.

At this time there seems to be no one who doubts the efficacy of the Pasteur treatment. The per cent. of deaths in 13,817 cases treated between the years 1886 and 1894 was only 0.5 per cent. In the report of the Pasteur department of Baltimore city, 200 cases are reported as treated with a mortality of 1-13 of one per cent.

SNAKE POISON.

Sewall, as long ago as 1887, wrote of immunising pigeons against rattle snake poison by inoculation of increasing intensity. The serum of artificially immunised animals has been found of value in snake poison. The missionaries report that the various decoctions of the witches of Africa for the cure of snake-bites have the liver of the snake in them. The antitoxin action of the liver, or bile, is generally supposed to be a modern idea. The Literary Digest of April 6th, 1901, quoting from the Scientific Revue of Paris, says the people of India and the interior of France use the bile and the liver of the dog for hydrophobia, and that of the snake for snake-bites, with success. Fraser of Edinburgh, proved that the bile of the serpent is an antidote. All of the antitoxins are under investigation and no doubt in a very short time many will be added to the list, and some dropped.

We are, at the present time, using another class of medicines in the treatment of diseases, a class termed animal extracts. Animal tissues have been used in the treatment of various diseases from the earliest history of medicine, and are handed down to us from the fathers of medicine, Hippocrates and Galen, and from the Shamans and Wizards of the savage tribes. To-day, in heathen China and the eastern lands the viscera of animals and the bodies of reptiles are used as medicine, and are in high favor. You recall the story of the Japanese princess, as told by Edwin Arnold, when it became necessary to get the liver of a fox

to cure the princess, and in gratitude for kindness once shown to the foxes by this good princess, the wife of a fox brought the liver of her husband in a basket and placed it at the foot of the princess' couch.

There seems to be nothing new, and history is constantly repeating itself, for now the extract of the liver, and the bile, is used as an antidote for some of the poisonous toxins. At this time, the practice of seeking in the glands and viscera of animals for medicines has been revived. Among the first to make the extracts prominent was Brown Sequard with his testicular juice; then the British physicians with the thyroid glands, followed closely by spinine, cardine, cerebrine, ovarine, and many other gland extracts compounded and extracted by Hammond & Co., Washington, D. C. Other investigations did not get the same results with testine and the other extracts claimed for them by its originator, and there is no testimony in favor of cerebrine, etc., save that of ex.-Surg. Gen. Hammond & Co., who manufactured the products. Thyroid gland has great therapeutic value, according to S. Solis-Cohen and others, who have written on the different animal glands, and their extracts, and the use of them in many diseases.

Thyroid is used in Myxoedema, cretinism, goiter, exophthalmic goiter, acromegaly, obesity, diabetes-mellitus, vasomotor ataxia, and some skin diseases such as psoriasis, lupus and eczema. Thymus gland and its extracts is used in about the same class of diseases as the thyroid. In an address delivered by Dr. S. Solis-Cohen before the N. Y. County Medical Association, May 21st, 1900, he recommends it in goiter, exophthalmic goiter, cachexia strumipriva, locomotor ataxia, whooping cough, and bronchial asthma, urticaria, and the nervous disturbance of the menopause, and he also cites references to other investigators who have used it in similar diseases.

Mahone and Babcock obtained gratifying results with thymus in acute mania and melancholia, puerperal and climacteric insanity, and primary dementia. Drewry and Henderson conclude that thymus extract is of very little value, if any, in any form of insanity. Gaither and others recommend it in delayed union of fracture.

The pancreas, and its extracts, are used in diabetes and some digestive disorders accompanied with cardialgia.

Suprarenal gland, and its extract, is a good local astringent, and is used in treating Addison's disease, hay fever, nasal congestion, and is found of much value in inflammations of the eye, such as conjunctivitis, panus, keratitis and like diseases where astringents are used.

PAROTID GLAND EXTRACT.

Sholer, in Philadelphia Medical Journal, August 4th, 1900, recommends the use of the extract in ovarian neuralgia and dysmenorrhœa, when there is no structural change. The daily dose is from 6 to 12 grs.

The splenic extract is recommended in goiter and insanity due to physical exhaustion. I have only mentioned the most prominent animal extracts, and, in a general way, the diseases in which they are used, without citing all the different writers, and their papers written on the subject of extracts. You can well see from the above that we are, in a scientific way, going back to the practice of the witches and ancient heathen, and to the practice of the lizzard-giving Chinaman.

DISCUSSION.

Dr. J. A. Burroughs: Diphtheria antitoxin and the antidote that we have from Pasteur for hydrophobia are the only ones in which I take any stock as far as my personal experience goes, in these animal preparations. I have had some experience in the anti-streptococcus serum and have possibly used as much as any man in the State and I must say I used it with a view of testing; I have used it in mixed infection of tuberculosis, in erysipelas, and it has been an absolute failure in every instance and I have used preparations from several different manufacturers, largely from one of the best in the country. In many instances there were produced abscesses and I regard it as a dangerous measure, totally worthless. In erysipelas I think the doctor would have succeeded better if he had washed with pure carbolic acid and washed it off with alcohol in about 15 or 20 seconds. I have used most of the anti-tubercle serums which have been put upon the market and they are absolutely

worthless. They have no place beyond a diagnostic value, and should be largely confined to cattle. If you have a case that is very doubtful before the bacilliary stage arrives you may be able to make a diagnosis with tuberculin. I think the antitoxin treatment in diphtheria is the only treatment for the disease. You can have a case of diphtheria in a house with a lot of children and if you will inoculate the children in 24 to 36 hours after exposure, the chances are you will not have any more diphtheria. It is the only treatment that promises good success in diphtheria. I have had an opportunity of using it in probably 25 to 35 cases and it works like magic but I have never used it in small or frequently repeated doses. I give one large dose and the age of the child has very little to do with it. I would not hesitate to give 1500 to 2000 units to a child 2 years old. There will be no constitutional symptoms in the child more than in the adult. I can recall but one instance in the number of cases where I have had to give a third dose.

Dr. Robt. S. Young: My experience has been confined to the diphtheria antitoxin, and it is hardly worth while to repeat that this is the only treatment now for diphtheria. My experience has been confined to probably less than 15 cases, and while there may have been faulty diagnosis in some of them, there was only one fatal case of diphtheria, and I fully concur in what Dr. Burroughs has said about the dose. I have rarely given less than 1500 units and it is rarely necessary to repeat that dose. I use no other treatment except the injection of the antitoxin.

Dr. H. W. Lewis: I have had two cases only that I have treated with the diphtheria antitoxin. I gave in those the large dose as mentioned by Dr. Young, but in addition I omitted nothing of the local treatment. I had the fauces sponged with peroxide of hydrogen and gave stimulants and strychnine. They both got well. Prior to the introduction of the antitoxin I was the witness of a scourge of diphtheria in the county of Northampton. In one house where there were 7 children it killed all except the mother and the nursing babe. I think perhaps the greatest advancement that has been made along any line of therapeutics is the introduction of the diphtheria antitoxin. I believe that every country doctor ought to have some and keep it.

Dr. Geo. W. Long: In pseudo-membranous laryngitis or true croup I had the misfortune to witness two deaths in my community which occurred after having had the benefit of everything that could be done in the old way except tracheotomy, and the parents would not consent to this. I had no experience in the use of serums, but the next case to which I was called of a similar nature, I injected 2,000 units of P., D. & Co.'s serum into cellular tissue of thighs, at different points, using a sterilized hypodermic syringe. This was done at 6 p. m. Patient showed improvement during the night and by morning was so much better that the friends generally could notice the change. There was no other injections of the antitoxin, and the recovery was entirely satisfactory. I used the same treatment in another case under similar circumstances with a good result. I have tried the same treatment in two cases in the advanced stages and lost both cases. I mention these cases from memory and without any attempt to go into details. All these patients had been treated by competent physicians before I was called into consultation, and there was no difficulty in our agreeing on diagnosis, and while there may have been some mistake about the diagnosis, and it is possible that the two recoveries might have taken place without the use of the antitoxin, I can but be led to the conclusion, in view of all the circumstances, that it had much to do in modifying the course of the disease and in hastening recovery. I should feel emboldened to try it further should occasion present itself. I do not suppose there is one here who has less patience with those persons who have a weakness for calling every case of follicular pharyngitis diphtheria, and every case of fever typhoid fever.

Dr. I. M. Taylor: It has not been my fortune to use any of the serums, but it has been my fortune on two occasions to use the thyroid extract in the treatment of two cases of insanity. They were two prominent cases and we expected recovery. We began to use thyroid extract, beginning with 10 grain doses, reaching as far as 60 grains in a day with prompt benefit in each, and in one a complete recovery. In the other there was a fair degree of return to mental health. So that the thyroid extract is still on

trial in insanity, and is at present in my mind a part of the treatment you can apply to these cases.

Dr. F. R. Russell: I have recently had a case of well developed myxodema. I put the patient on thyroid extract grain V three times a day and the result was all that could be desired. Of course the thyroid feeding had to be kept up, and in this case it has been, probably 6 months, and no one could tell there had been any trouble.

Dr. McAnally: In regard to the antitoxin of diptheria I do not think those who have lived in smaller towns have an opportunity to test it. In the northwestern States there is a great deal of diphtheria and in the large sense there they have it and the Health Board demands the use of the antitoxin and a tube is sent to each physician who pronounces a case of diphtheria and he takes out the true culture and sends it to the microscopist and a diagnosis is made and the antitoxin serum is used in all cases without local treatment and nearly all cases recover. I have such a disgust for the animal extracts.

Dr. Bass: It is fortunate for me and the community in which I live that it has very little diphtheria. I have only had an opportunity of treating three cases. One was treated with the old treatment in connection with the antitoxin and recovered. The other two I saw some distance from the town in which I lived and I did not know what it was. I knew it was some toxine disturbance, but about the time the membrane disappeared in the throat the child died. There was another child in the house who developed it pretty soon and he was a poor man some distance from town and I hesitated about getting the extract for him and did not use it and the patient died under the old manner of treatment. I regret very much that I did not go to the expense and buy the antitoxin myself. I notice the gentlemen here use the term unit. I do not know what a unit of antitoxin is. We have no standard of that except what the manufacturer says about it, which is indefinite, and just what 10 cc means in units I do not know. I am glad the gentlemen are using it because as I said in my paper the statistics are very incomplete from the small territories.

President Baker suggested that the Secretary of the Board of

Health devise some means of having bacteriological tests made for the diphtheria bacillus.

Dr. Lewis: The appropriation made by the State Board of Health is insufficient but we were successful in persuading the Department of Agriculture to do bacteriological examination of drinking water free of charge; but from the response that has been made to that I feel discouraged, and I doubt very much whether if the offer was made to the profession to have the bacteriological diagnosis of diphtheria made, they would avail themselves of it. I base that upon this experience. Some years ago Dr. R. H. Whitehead, who was certainly skilled in that line, agreed that he would make Widal's test for typhoid fever for any physician who might desire it, free of charge. About how many responded to this offer, Dr. Whitehead?

Dr. Whitehead: I think I had one sir.

Dr. Lewis: That is the discouraging thing about it. My recollection is that about 10 took advantage of the offer to have bacteriological work done by the Board of Agriculture. I sent a letter to every doctor whose address I could secure in regard to the offer of the Department of Agriculture to make these examinations. In the past 4 months 10 physicians had this done. I will be very glad however to see if anything of that kind can be done in the laboratory of the Department of Agriculture.

Pneumonia and its Treatment.

By JOHN C. RODMAN, M. D., Washington, N. C.

I suppose that an apology might be appropriate to this honorble body for reading a paper on such a hackneyed subject as the treatment of pneumonia, but we must recollect that this is no uncommon disease, and by no means without its mortality rate, and though it is what is considered a self-limited one, the individual mortality can be materially reduced by timely and proper treatment. It at times plays sad havoc in the homes of the beautiful and rich, cutting down the flower of the flock, as well as in those of the poverty stricken and miserable, taking from them, perhaps, their mainstay and reliance. No class, no race, no age and no sex is exempt, and as it attacks all, likewise most of the

drugs of the pharmacopea have been at one time or another in some shape or form used in its treatment. There has been no specific drug claimed in the treatment of this disease, unless it be the injection of the pneumonia antitoxin, and I take it that this is still in the experimental stage. So as before stated, though it may be a much hackneyed subject, it is still a very important one, requiring for the successful treatment of a bad case as much individual skill and good judgment as is requisite for any disease in the category of the general practitioner.

There have been numerous attempts at classification, according to locality, as lobar, lobular, apical, central and broncho. And again, as to the exudate, fibrinous or croupous and catarrhal. Still again, such terms as typhoid pneumonia, bilious pneumonia and malarial pneumonia have crept (improperly I think) into the nomenclature of this disease. It is true that we may have as a complication of pneumonia almost anything that human flesh is heir to, and vice versa, but why should it be called a "typhoid pneumonia" because it happens to be a pernicious case, having such symptoms as a constant delirium, carphologia and sub-sultus tendinum? The term, to say the least, is a misleading one.

They, who are considered authority upon this subject say that "this disease is caused by the invasion of the lung by a variety of bacteria, oftenest by the diplococcus pneumonia and characterized by a fibrinous inflammation of the lungs, and a variety of symptoms in part due to the absorption of toxins from the lungs." The diagnosis is usually considered easy, except in young children where it is most apt to be overlooked, and the fever attributed to something else. But in adults the sudden chill, sensation of tightness in chest, pain on coughing, rapid breathing, together with the physical examination, usually makes it a comparatively easy matter.

Now comes the question, what course or method shall we pursue in the treatment of pneumonia?

It is generally conceded that in the majority of cases of an unfavorable termination, that the cause of death is due to the action of toxins absorbed from the lungs, on the vital nerve centres. As there is no specific medication, and as the disease

in question is a self-limited one, our efforts must be towards strengthening and sustaining the vital forces of our patients until the crisis is passed. To have our patient in such condition that the heart, the vital organ most concerned, will be able to withstand the severe strain put upon it. There can be no fixed rule for our guidance in these cases, but each individual case is a law unto itself.

It is said at the present time by those eminent in authority, that venesection has killed more than it has ever cured, but we must not forget that the pendulum may swing too far, and hence be of detriment to our patients.

There *are* certain cases in which the abstraction of blood is followed by beneficial results without which, judging from our own personal experience, bad results might follow.

Take a case of this kind: R. R. ——, negro man, age twenty-two, fisherman, taken with sudden chill while standing waist deep in water engaged in his occupation, severe pain in both sides of chest, shortness of breath, a great sense of tightness and constriction, and feeling as if he could not get enough air, was put in a sail boat and brought thirty miles to my town, with all symptoms increasing. On his arrival I found him in great distress, some cepitant rales in both lungs, with dullness, respiration 40 to the minute, nostrils dilated, unable to lie down and breathe, and a full bounding pulse of 95.

It seems to me that the patient was almost in extremis and would die from suffocation. I had about decided that this, if any there were, was a case for the abstraction of blood, and was getting ready to do it, when there came on an unusually free nasal hemorrhage. I sat down and watched events. After there had been about a half pint of blood-flow, the patient's expression seemed changed, less like an extremely sick man, the pulse became softer and somewhat reduced in rapidity, breathing became easier so that when hemorrhage had ceased patient could lie down fairly comfortable. This was about four o'clock in the afternoon, and on my visit next morning I was informed that all symptoms and method of relief had been repeated about midnight and patient was then fairly comfortable. He had dullness in both lungs, and the typical rusty colored expectoration of

pneumonia; after a variable and somewhat irregular course, the fever became normal in about two weeks and patient recovered with little other medication.

I only cite this case to show that there are some, though I think few, in which venesection is the proper treatment in the early stages.

My observation has been, that those cases which in the beginning have a good full pulse, not too rapid and not irregular, will need but little medication other than careful nursing and good nourishing food, which will be easily digested. Should the temperature go beyond 103°, sponging with cold water and a small dose of phenacetine and dovers powders to reduce it will do no harm, and then 20 or 30 grains of bromide of soda, or 15 grains of trional at night to quiet nervousness, and produce sleep will be all that is required.

I can not protest too strongly against those nauseating cough remedies consisting of ammonia, opium in some form, and syrups of every kind, given every hour or two with the idea of increasing expectoration and aiding in expulsion of exudate, but really accomplishing in many cases, nothing more than to increase the nervousness of your patient at the idea of taking something every hour and destroying the digestive tone of the stomach. These cases by a careful attention to the details of nursing will pursue a favorable course unless there be some unexpected complication.

In pneumonia, the action of the heart if carefully noted, will aid you most in the proper treatment to pursue and in your prognosis. It is the organ most vitally effected by the action of toxins, and its failure is most often the immediate cause of death.

I believe that the most valuable drug that we have to fortify the heart against the action of these poisonous and depressing toxins is strychnia, and I think that the mistake most often made, is in giving this drug too late to get the lasting stimulating, and enervating cardiac effect.

As said before, if the pulse is a good full one not too fast and not irregular, then but little medication is needed, but per contra if very soft and lacking in volume and quite rapid and at times irregular, I think strychnine is the drug par excellence,

beginning as soon as possible with a moderate dose three times a day and increasing as the disease progresses. Beginning early whether the organ needs immediate stimulation or not, we get a condition of muscular tone which enables it to better withstand the nervous excitability produced by the poisonous toxins on the cardiac nerve centres.

A very valuable adjunct to the use of strychnia toward the latter part of the disease, when the first sound of the heart becomes not so distinct, is alcohol, in the form of a good whiskey or brandy.

I think it a mistake to give it early in the course of the disease, unless the patient is an habitual drinker, and if so it should be given in moderate quantities from the beginning, and increased as it becomes necessary, though in such cases we partially lose the beneficial results to be gained when patient gets in that low depressed state near crisis and needs active stimulation. At such times, I know of no cardiac stimulant which is equal to alcohol judiciously administered. Of course there are more powerful agents, such as nitro-glycerine and nitrate of amyl which may be used in emergencies, and be of great benefit, but for ordinary use, unless there be a very great depression of the vital forces, I think alcohol better.

After the crisis and patient's temperature becomes normal or nearly so, the tincture of nux vomica will act both as a bitter tonic, stimulating the organs of digestion and as an excellent cardiac tonic. In conclusion let me say a word about the injection of the normal salt solution in the treatment of the disease, though I have never had occasion to use it, I have seen some very logical articles in the medical journals upon the subject and I believe it to be good treatment in that class of cases in which we ordinarily look for a fatal termination. It is a powerful cardiac stimulant, diluting the toxins in the blood, and increasing the action of the excretory organs.

I shall certainly try it at the first opportunity.

DISCUSSION.

Dr. R. H. Lewis: I was very much interested in the experience of Dr. Henry W. Lewis, of Northampton, in the treat-

ment of 20 or 30 cases with creosotal. I shall be glad to hear if the doctor has had any further experience with creosotal.

Dr. Henry W. Lewis: It is with considerable reluctance that I tackle the subject of the treatment of pneumonia. It is large in view of the fact that it has been almost as variable as the sands of the sea. It has heen called the battleground of therapeutics. In 1899 I read the paper of Smith on pneumonia, "The treatment of pneumonia as based on its etiology." It was published in the Medical Times. He endeavored to take the disease out of the category of inflammations among other things. This paper treated of the antiseptic treatment of pneumonia and went back, taking in view all of the old treatment, including the salicylates, bleeding and all. He recommended creosotal and also gave some statistics and mentioned how and where pneumonia had been treated with Creosotal. Creosotal is the carbonate of creosote. It was just before the time I expected to see pneumonia and got the druggist to order a pound. It was backed up in a small way by William H. Thompson, a man for whose clinical experience I have great respect. I would report my results but unfortunately a large majority of my patients were young people. Lobar pneumonia is rarely fatal in the young. The result of any treatment should be backed by an enormous number of cases; it should also be endorsed by a number of observers. I got very brilliant results in children. I commenced to give it in emulsions flavored with some of the essential oils and found it was very well retained, and afterwards, being a country practitioner and having to carry my drugs, I got to giving it in hot milk and sugar, which I think is the best way. I got good results in the first few cases. I saw nothing brilliant until I began to push the drug until it decolorized the urine, and when that got dark I commenced to smell it in the room a little bit and the nurses would say, what is this smelling? I did not relax anything of other treatment. I gave strychnine nitrate, nitro-glycerin, alcohol, mercury in just such doses as to keep the secretions acting. I had in all 34 cases of pneumonia, the majority of which were in children. About 12 cases were negroes. Of the 34 cases 4 died. Two I saw when they were moribund. The oldest case I had was 65 years old. There was

resolution under full dose of creosote. In the 34 cases there were only 5 distinct crises and they were patients that were seen late. My conclusions about the use of the drug are briefly: If the patient is seen immediately after the chill, and the drug is pushed freely you have an antitoxin. It should be given, in my opinion, on the principle of antitoxin of diphtheria. Of course a man's judgment will determine how much a patient can stand. My experience is that he can give it certainly, in one drachm doses, and repeat after 4 to 6 hours without any disturbance. I have had better success than I ever had before with the same number of cases of pneumonia, yet I am loath to lay too much stress upon any drug, because the mortality varies from year to year so much, that any conclusion upon a small number of cases, a number that does not mount above the hundreds, must be incomplete. I have had a good deal of experience with the disease. In my early practice where I am living I treated 14 cases of pneumonia on a plantation. The treatment was exceedingly simple, consisting in nothing but whiskey, quinine, dovers powder, and calomel to keep the secretions acting. I was priding myself on my success. A little while afterwards in my own neighborhood, in the town in which I lived I had the misfortune to see within 2 weeks 4 of my best friends dead. Everything was tried. Consultation was sought, but they died. My attention was called to creosotal, by the article of Smith which can be had by those who wish to see it, and it is such an article that I do not think any thinking man can pass unnoticed. Creosotal does no harm. Support the heart with strychnine, and keep the patient toned up and I do not think one drachm will hurt an adult or 20 drops a child.

Dr. R. H. Whitehead: My attention was attracted to creosotal by the same article which has been alluded to. Smith is a man who is by no means enthusiastic on the subject of drugs, and my attention was at once attracted to the drug. My experience is so limited I do not feel like drawing any conclusion from a few cases, when the mortality is so variable. A man will sooner or later find cases where he is absolutely helpless. My cases of pneumonia with creosotal are 4 in number. One of these died 36 hours after the chill, but in the 3 others

they all got well. I used creosote carbonate, 20 drops every 4 hours and all three ran exactly the same course. About the fourth day there would be a sort of pseudo-crisis, temperature fall 2 or 3 degrees and stay there, and the patient presented a deceptive appearance, seemed so much better than he really was; would want to laugh and joke with you, yet if you took his pulse it would be as fast as before and respiration as fast. About the 7th day as usual there would be the real crisis. My experience was very encouraging.

Dr. A. A. Kent: I presume that every doctor here feels that he knows how to treat pneumonia, and I feel somewhat presumptious in offering my experience to this body of physicians. However I do feel that pneumonia is one of the diseases in which treatment does modify the disease and do good. While I always approach a case of pneumonia with a feeling that it is serious sickness, if there is one disease above another that I love to treat it is pneumonia, because I feel that I can do some good to my patient, and feeling that way about it I am induced to speak of the treatment I have pursued during the past two seasons. Winter before last we had an epidemic of pneumonia in my country. I saw some 40 cases. I probably made a mistake of diagnosis in a few of these. I only had one fatal case and that I hardly count in my own practice because I was called into consultation, to see an old gentleman who was 70 years of age, who died in less than 24 hours from time I saw him. I do not have any new remedies to suggest. I have relied first for the relief of pain upon morphine or opium. I would feel that I had not done my duty to my patient if I did not relieve his severe pain. Morphine is perhaps the best remedy to relieve pain. One case I recall in which I bled the man. He was suffering intensely with pain and had taken 6 one-quarter grain tablets of morphine before I reached him and was not relieved of his pain. I felt that he had taken enough, and proceeded to bleed him something more than a pint, and before I was through he said that was the first thing that had given him any relief. He made a good recovery though I continued the routine treatment. I use tincture of aconite in the majority of my cases. I do not use it in every stage, but in the early stage I believe it does good.

It will slow the pulse rate and relax arterial tension. You will gain a great deal in relieving the heart in that way. I use sweet spirits of nitre. I believe it acts on the skin and kidneys and conduces to the comfort of my patients. I have used Parke Davis' euthymol, 20 drops every 3 hours. Whether this has any combative action in destroying the pneumococci I do not know, but I do know my patients take it well. The stomach is kept in a better condition, and in that way benefited. In stimulants I like alcohol but I believe strychnine nitrate is better. In some cases I like digitalis. I would not give digitalis early in the case. In one instance, when I was a younger man and had less experience, I gave my patient tincture of digitalis early in his case and the more digitalis the harder the heart pumped against his sore lungs, and the more acutely he suffered. I faced about and gave the tincture of aconite and fluid extract of ipecac until I had relaxed him when he was relieved. I had been using morphine all the time but it did not seem to relieve him. While all these remedies are old timed, I think they are good and shall continue to use them. During this past winter I have not had so many cases. I have had about 25 cases and lost only one.

Dr. N. B. Herring: For about 35 years I had a hobby horse in my pneumonia and I rode him a long time very successfully. Dr. Kent is riding the same one today, I think. I used to think I could cure pneumonia. I tried all the old-fashioned remedies. Dr. Kent is certainly right about one drug. You will find a man with high temperature and dry skin. He must get relief. You can relieve him by relaxing the blood vessels, but that sometimes is too costly. I think an ounce of blood taken from the seat of the pain is equal to a pint from the arm. But the remedy for pain we all know is opium. There is a vast difference in pneumonia in the kind of dose you give. I used to give it in one-quarter grain doses, but I saw one-quarter grain kill a grown woman one day. It was administered by a physician and the woman was his wife. Large doses of opium depress the heart, as you all know, and small doses stimulate it. I give one-tenth grain every three hours day and night. As Dr. Kent says, tincture of aconite is good. I think it saved a boy's life for me year before last. Taking all in all, homeopathic

doses of morphine frequently repeated and let pneumonia take care of itself.

Dr. Sikes: I feel a good deal like Dr. Kent did just now. It strikes me forcibly that every man present feels that he knows how to treat a case of pneumonia, and yet I remember in the last few weeks an effort to get a paper up on that subject. In a disease with a death rate of 17 per cent. treated by the medical man who understands the treatment thoroughly there must be some mistake in the treatment. I think Dr. Kent has the key note of the treatment of pneumonia. I very little doubt if I were to give you my experience some of you gentlemen would say I am egotistic on that line, but I am satisfied that in the whole range of my acquaintance I know nothing so good for the treatment of pneumonia as quinine, opium and ipecac. Give me these three drugs and anything less than 60 years behind the patient and I really feel that I am running no risk in taking that case of pneumonia. I hope you gentlemen will pardon it, for I do not mean it for egotism, but in a practice of 18 years I have lost only two cases of pneumonia under 60 years of age. I am hardly willing to admit I have not had some serious cases of pneumonia, though I may have made some mistakes in diagnosis in that time. When I am called to a patient with pneumonia, if I get there within 48 hours, I find the patient with pain in the side; trouble in breathing, dry skin, high fever, dry tongue. If the pain is very acute I give morphine; if not very acute I put up a combination of quinine, opium and ipecac in the proportion of grain 1 of quinine, grain one-quarter of opium, and grain one-quarter of ipecac powdered, made into a pill and in 48 hours most every time, and 72 at the longest, you will find that you have softened down the respiration. The congested lung is replaced by the crepitant rales, the skin moistens, of course profuse perspiration takes place and when you have done that you have attained the comfort of your patient, and as Dr. Kent suggests, put him on sweet spirits of nitre, paregoric and bicarbonate of potassium, and so far I have found that treatment to act most admirably. In low cases we have to resort to stimulants. I have used digitalis, strychnine nitrate, ammonium carbonate. I believe they are all worthy of

our consideration. I am inclined to think that possibly the most reliable we have is nitrate of strychnine. In ordinary sthenic cases of pneumonia we do not have to resort to those stimulants at all. In old drunkards and aged persons you always have to have some cardiac stimulant. I have also got good from the use of alcohol. That is about the only disease where I think I got any good from the use of alcohol. For the past century the death rate has not altered materially if at all, it is about the same to-day as 100 years ago, and if in our rapid progress of discovery we have not been able to lessen the death roll of 100 years ago, the conclusion would be our new fangled ideas are not superior to the old hobby horses.

Dr. J. F. Miller: I have been somewhat sidetracked for the last 12 or 14 years but the discussion has been very interesting to me. I am reminded by Dr. Sikes of a remark one of our distinguished barristers used on a certain occasion in addressing a body of medical students. He was complimenting them upon the advance of science and medicine, how much more scientific the young men of to-day were than the older doctors and he wound up by saying: But I doubt very much, young men, whether you will cure more patients than the old doctors, who believed in hell and blisters. I have been practicing long enough to witness the rise and fall of theories. I remember very well when you were called into consultation 40 years ago to see a case of pneumonia you would naturally suppose your brother had salivated, bled and blistered him. I believe in the virtue of medicine and the scientific administration of it. I believe we can alleviate suffering and can modify the course of disease in a great many cases. I used to believe I cured pneumonia. I have denied the statement of modern times that pneumonia is a self-limited disease, because I have gone to patients with high fever, bounding pulse, and taken from him about a quart of blood and his pain left him, skin became relaxed and that man never did get back to his former condition. And I used to have a hobby. The prescription I used was quinine, digitalis and dovers powder and I thought it would cure 75 to 80 per cent. of people with pneumonia. The main thing in the treatment of disease is to do no harm. Dr. Dixon said in a lecture 35 or 40 years ago the

first thing to do is to do-no-harm. I once had a friend who had a pint cup of tea made of ipecac with a little antimony and he cured his patients with that. After all I believe the main thing is in keeping up the heart action. I believe in strychnine and quinine. I heard a medical friend of mine say once he never forgave himself if he let a patient die of pneumonia with a sound skin. I would like to have an expression of whether you can cure pneumonia. My opinion of pneumonia and typhoid fever as to whether they get well or not depends mainly upon the type of fever or pneumonia they have.

Dr. H. T. Bass: I was very much instructed with the discussion on Dr. Rodman's paper and I think if I had been with Dr. Rodman when he bled his patient I should have agreed with him. In an investigation of the subject of pneumonia some time ago I found I had been at sea a good many years. I used to think I cured pneumonia when I first commenced to practice medicine with calomel, quinine and jalap. Some time a year or two ago we had somewhat of an epidemic in my practice of pneumonia and a great many died, and this year we have had somewhat of an epidemic and the mortality has been large. In investigating the subject of the mortality I find that the United States Census for 1890 gave the mortality rate greater than any disease we have been keeping statistics of except consumption. Dr. Webster in the Practitioner for 1900 says in the treatment by blisters, calomel, ipecac, antimony, potassium and large doses of quinine, blood letting that the statistics had not been changed. In private practice we get better results than in hospitals beeause we have better patients. The best statistics give 17 to 40 per cent. in hospitals. I find there is no disease about which the profession has been so much at sea as pneumonia. I have tried everything and to-day the treatment that seems to hold out better prospects than anything else is the water treatment. Cold water locally and internally, cold baths, ice bags. It is almost exclusively recommended by Moize and Hare. Moize is in the habit of treating his patients with ice packs. He makes his patients comfortable and gives hygienic remedies and stimulants in the shape of foods. We have gotten such good results in diseases such as typhoid fever in the cold bath treatment that we

are resorting to it in all the diseases that have high temperatures. As the doctor suggested in his paper, salt water treatment is now in vogue for pneumonia, not only in pneumonia but in all cases of prostration. They are now giving it hypodermically, pint or quart injections. It eliminates the toxine poison if there be one in pneumonia, stimulates the heart, the skin and the kidneys. Osler recommends it very highly, in all fevers, typhoid, diphtheria, measles, scarlet fever, and their complications.

Dr. R. J. Gill: During the war we had a patient regarded as moribund, he was left in my charge with directions for burying. He had been unconscious for 24 hours. I placed a blister 12 inches square on him and gave him enemas of French brandy and milk and in 6 hours I had the man taking brandy by the mouth. I find in pneumonia each epidemic requires treatment suited to the epidemic. I have great confidence in veratrum viride, in every case that requires it. On the whole in sthenic cases of pneumonia nothing answers so well as aconite and opium. In some cases where we have malarial complications I keep the pain down with opium and control the circulation and the patient gets well.

Dr. B. F. Halsey: I will say in regard to alcohol in pneumonia that I am in the habit of using it internally, externally and eternally, and consider it one of the best.

The Importance of Early Diagnosis and Treatment of Tuberculosis.

By J. P. MUNROE, M. D., Davidson, N. C.

It is realized that in presenting a few thoughts on this subject a well beaten path must be trodden, and statements made that to many will appear commonplace and too self-evident to be reiterated.

To the specialist, any statement bearing on the importance of early diagnosis and treatment of tuberculosis is axiomatic and he is keenly alive to the value of early diagnosis and the possibilities from prompt treatment.

Unfortunately, however, among general practitioners there is

a sort of apathy born of despair that looks with utter hopelessness upon everything labeled tuberculosis; the result being that the physician closes his eyes as long as possible until finally the dreaded truth is forced upon him, and he either resorts to palliative measures or shifts the responsibility by advising a change of climate and probably a visit to a specialist.

Being one of this general class of practitioners and knowing from experience as well as from observation the seriousness of delays that often occur, I desire to call attention, briefly, to some fundamental truths bearing upon this subject in the hope of arousing a more active interest in behalf of this large number of unfortunate patients.

When we consult the mortuary tables and note the large proportion of deaths resulting from this disease; or when we look abroad over our own State and see its widespread ravages ; or if we confine our vision to the narrow limits of each individual physician's practice, and observe the high ratio which it bears to other fatal maladies, certainly no discussion should seem common-place, and no consideration unworthy that looks toward the better care and treatment of this class of patients.

It may be observed, and the most astute specialist will admit that an early diagnosis is not always easy.

It is not uncommon for galloping consumption to be diagnosed as pneumonia or typhoid fever, and after several weeks the case passes on to one of chronic phthisis or to an early death. In these cases the early diagnosis is probably of less importance to the patient than to his friends and nurses and, I might add, to the reputation of the physician.

Without enumerating any large number I may mention a very striking case of this kind that came under my observation recently.

In our out-door clinics, I examined, with some students, a colored man about 35 years of age who had been sick three or four weeks. The history as given by his friends was very meagre and unsatisfactory, one statement being that his sickness was supposed to originate from a blow upon the head.

Another view which had more adherents among those who had been with him was that he had swallowed a large quantity

of cotton seed meal in the oil mill where he had been at work, as was evidenced by the character of matter that had been vomited. I found him comatose, with a temperature of 105; abdomen tympanitic and other indications of the last stages of typhoid fever. So far as could be ascertained his previous health had been perfect, and there was no history of a cough or lung involvement in the present sickness, and I may candidly confess that I did not examine his lungs. I told my class that while the diagnosis was not clear the indications pointed to septic peritonitis due to typhoid perforation, and as the end was not far off we might have an opportunity of verifying the diagnosis later. The opportunity came and I opened the abdomen, confidently expecting to demonstrate a typhoid perforation. To my surprise, however, I found only a peritonitis limited to the subdiaphragmatic region, no perforation and no ulceration. The existence of this small amount of peritonitis was a very small grain of comfort to one who expected to demonstrate so much. I immediately began to think about the theory of a blow upon the head, but, as a matter of routine, next opened the thoratic cavity, and to my surprise found both lungs masses of tuberculous tissue in a complete state of disintegration.

Chronic tuberculosis often exists in old people without any very evident symptoms and these cases too are sometimes detected only after death. A striking case of this kind came under my notice not a great while since.

A man who was regarded as robust and healthy, and who was following his daily avocation as a farm laborer, died suddenly without a day's sickness. Diagnosis—heart disease. On taking out the heart and examining it I found it enlarged, degenerated in spots, and a slight atheromatous condition of aorta. No valvular lesion, but there were in the heart and large veins antemortem clots, which with the dilatation and hypertrophy indicated serious obstruction somewhere. It was not far to seek, for both lungs were found in an advanced stage of fibroid tuberculosis.

Another class of cases in which the symptoms are obscure and diagnosis often difficult, is in children, and certainly no one could magnify the importance of giving them prompt attention.

Such diagnostic features as the presence of a cough, with expectoration, and tubercle bacilli, with night sweats and the ordinary physical signs may be entirely wanting. The only symptoms of disorder may be irritability, loss of weight, and apparent paroxysms of malarial fever. So difficult are these cases that an eminent authority advises that they "should be observed for several weeks and sometimes months before giving a positive opinion relative to the diagnosis or prognosis."

Another safe rule might be added, that in all such suspicious cases, the most careful attention should be given to the general condition and the surroundings of the patient, and hygienic measures, at least, ordered with a view to the most serious diagnosis.

Making all proper allowance for cases in which it is difficult or impossible to make a diagnosis as early as is desirable, there still remains a large number of cases in which the diagnosis ought to be made and could be made but is not until irreparable damage is done.

The fault often lies with the patient or his family rather than the physician. A "protracted cold," troublesome though it may be, is thought to be too slight a matter to justify a doctor's bill, so laxative quinine tablets, anti-cold, and other simple remedies, are used. Or probably a cold in the chest and its attendant cough becomes so annoying that the opinion of the druggist is invoked and he very generally donates a sample bottle of Dr. ——'s new discovery for consumption. The name is attractive even if suggestive, and the immediate effect is so soothing that the druggist has no difficulty in selling a half dozen fifty cent bottles. Later, upon the advice doubtless of some friend, he decides that he will have to take cod liver oil. By this time he is getting somewhat uneasy, but only after he has tried several varieties of emulsions and tasteless preparations does he do what he should have done in the beginning, consult his physician, now too late to receive any benefit.

Another kind of patient easier to reach, but more difficult to hold, is one who consults the doctor on the least sign of disorder, but the barest suggestion of tuberculosis so frightens him that his first and chief impelling thought is to run somewhere, any-

where, to get rid of the disease and the doctor who even suggests it. These patients, while they often decline our treatment, always excite our deepest sympathy. If a female, she is apt to attribute all her troubles to a disordered menstrual function and refuses to accept the view that this is the result rather than the cause of the trouble.

If a male, he is apt to attribute all his troubles to overwork and broken down nervous system. I saw an interesting case of this kind recently which excited my deepest sympathy. A very intelligent gentleman consulted me for a chill which he had had and which he supposed was malarial. I questioned him particularly as to his general condition and found no satisfactory explanation of his chill. He had no cough, no pain in the side, but finally he did somewhat reluctantly admit that he had had a hemorrhage seven years previously. Making a note of this I prescribed something for temporary relief and advised him to see me again. A few days afterwards he had another chill, and this time I made rather a more thorough examination and found in one lung physical signs of some kind of disorder. I told him the status of affairs and stated as there was no cough and no sputum for a microscopical examination I would like to use the tuberculin test by injection so as to ascertain if possible the exact nature of his trouble, telling him plainly that I feared the presence of tuberculosis. Instead of agreeing readily to my suggestion he immediately said he thought he would go home, so overwhelmed was he at the thought of tuberculosis that he was unwilling to be enlightened or even to allow his physician to know definitely his condition. I explained to him that in his present condition, for his general health was excellent, even if tuberculosis was present the probabilities were that it could be cured if treated promptly and intelligently. While not objecting to his going home I urged him if he did so to place himself under the care of a competent physician and secure prompt and regular treatment. He finally agreed that my advice was wise and left my office promising to return next morning. Instead of this, however, the next day he sent me word that he was sure he had tuberculosis and did not want to be any more certain of it, but thought probably his chief trouble was a nervous break-

down due to a sedentary life and over-work. Consequently he would go home and would like for me to send him a prescription for tuberculosis that he could use continuously. I have not heard from this patient since, but I greatly fear that he will allow his case to go untreated until he is beyond relief.

It is sometimes difficult to determine whether it is honest error and disbelief in the opinion of the attending physician or a wholesome dread of this terrible disease that causes patients to run from one place and one physician to another, refusing to place themselves regularly under treatment. Certainly it is our duty as physicians to deal with them kindly, yet firmly, and endeavor as far as possible to impress upon them and their friends the danger of such a vacillating course.

In cases where the fault may properly be placed upon the physician, the influences bearing upon him are somewhat of the same nature and in a certain sense it is the sympathy and kindness carried too far. It is often the case that the physician examines and treats indefinitely a bronchitis which he feels uneasy about but dreads to probe thoroughly. He tells the patient that he has bronchitis, which is true, he hopes there is nothing more, and matters go on from bad to worse, both patient and physician blinded to the true nature of the case, but the physician in these instances is responsible for the delay. Probably every one of us has seen cases of advanced tuberculosis who have been treated for months or even years and told that they have a stubborn case of bronchitis. Besides the natural dread and the proper sympathy which the physician has for the feelings of the patient, his apparent negligence and delay in making a positive diagnosis is sometimes due to the fact that he feels like it really makes no difference about making a positive diagnosis, because if it is tuberculosis, that means certain and inevitable decline of health and death. He knows that there is no specific for this disease, and consequently feels that it is possibly a kindness to the patient to let him enjoy life while he may. This assumption, however, is entirely wrong when viewed in the light of modern treatment.

No one will claim that there is any hope for advanced cases of tuberculosis, but that there are a large number of cases cured

or arrested when treated early, no longer admits of doubt. Without giving lengthy statistics in support of this assertion I need only refer to the tabular statement of the various sanitaria which make a specialty of this disease, or the able specialists who are members of this Society. My own experience, which is rather a limited one, bears me out in the assertion that treatment is not only valuable but often effective in arresting the disease. Realizing then the importance of an early diagnosis and treatment, the question at once arises how can a diagnosis be made in these early stages and what measures should be adopted when made. It is not the purpose of this paper to enter in a full discussion of either one of these questions, but the importance of the subject justifies a brief reference to one or two points in each.

Where there is expectoration, every one realizes the importance of the microscope for diagnostic purposes, and if the bacillus tuberculosis is found, of course there can be no further question as to the nature of the dssease. Negative results by this method, however, should never in any suspicious case be accepted as conclusive. Probably the other measures to be most relied upon is the injection of tuberculin. I have found this invariably in my practice to give a reaction in case of tuberculosis. Statistics given by authorities state that it will do so in a large percentage of cases. Another method, that is valuable, however, only in the hands of an expert, is the use of the X-ray. I deem it unnecessary to go into details as to the use of these various methods but desire simply to call attention to their value and importance.

Of the clinical features that should arouse our suspicion I attach more importance to the temperature than any other one symptom. An afternoon rise, either with or without a cough, progressive debility and loss of weight should always arrest our attention and suggest the necessity for accurate methods of diagnosis. Add to these the rapid heart and increased respiration, the hollow chest and family history, and the picture is often completed whether physical signs are evident or not.

As to the treatment, the important thing to remember is that individualization of the patient is the key-note of success. The time has passed, if it ever existed, when a man should undertake

to write a prescription for tuberculosis applicable to cases in general. Herein lies the value of constant and careful supervision of cases. No one is more sensible of this than the conscientious specialist, even although he may have some one medicine or line of treatment upon which he places his chief reliance. This individualization of patients and treating each one upon its own merits applies not simply to medicinal measures but to diet, exercise, bathing and climate as well. We too often hear the family physician simply give the advice "go to the mountains." Instead of this, if he himself has not given the subject sufficient attention to feel justified in giving specific advice and treatment he should say perhaps a change of climate will be beneficial, but even in this matter you must be guided by the advice of some one who has made this a study, and wherever you go do not trust simply to the climate alone but place yourself under the care of an intelligent physician. It is said, however, that 95 per cent. of the cases of tuberculosis must be treated at home on account of the financial inability of the patient to go elsewhere. For this large class of suffering humanity I appeal to the family physician to exercise more patience, more thoroughness, and more care in the investigation and treatment of these cases.

DISCUSSION.

Dr. H. B. Weaver.—There are two reasons why the early recognition of this disease is of importance.

1. It is the most prevalent of all diseases and devastates the world more than all other contagious diseases together. I believe J. P. Whitaker says two-thirds of mankind is affected with tuberculosis, and that one-third die of the disease, hence 50 per cent. make spontaneous recoveries.

2. The next reason is that it is the most curable disease in its incipience. It was Trudo I believe last week who said in a review work, statistics showed 75 per cent. of cases were curable in the incipient stages and after the advanced stages were reached the mortality was very high. There are a few unmistakable symptoms by which an early diagnosis can be made in my experience, in what some call the pretubercle stage, before there is any dullness or depression, any rales, not much cough, or any

general manifest symptoms which we recognize as the second stage of the disease. The first symptom that calls our attention is the diathesis of the patient—shallow chest, want of expansion, long arms, long neck, peculiarity of the teeth, or somthing of that kind. Probably inheritance is shown somewhat in the fact—you may have loss of flesh, slight cough. Then comes the rise of temperature, .5 to 1 degree, with the accompanying anæmic condition and moderate loss of flesh. There is prolonged expiration, a harsh inspiration. There is a cogwheel action somewhere in one portion of the lungs. As the disease advances there will be dullness on percussion, crepitant rales. If you are not then satisfied, use the tuberculian test, one c.c. of tuberculin will give you an unmistakable sign.

Dr. Payne.—I am very much interested in the paper because I believe phthisis to be almost incurable unless diagnosed in its incipient stage. When a patient is so afflicted with tuberculosis that you have the signs just given increased fremitus and cogwheel murmurs I feel that the best chance is gone. We can not afford to be deluded with the idea that 50 per cent. of those who have tuberculosis of the lungs can be cured, therefore we are driven to believe that the most that can be done in the care of tuberculosis is in its prevention. The anæmic-pretubercular stage is the one in which most can be accomplished. Take a patient with enlarged and suppurating tubercular glands in the neck, and if we do not deal with the gland promptly we will almost surely get phthisis, and the same to a lesser extent is true with tuberculosis of the bone. In these preventive measures it seems to me that we have the best hope for the safety of our patients. Some can be cured after the incipient stage, because autopsies prove this, but these are rather curiosities than the thing to be expected.

Dr. High.—I think this paper merits full discussion. In an experience extending over several years in which I have given more attention to it than anything else, I am justified in confirming the opinion of those gentlemen who have spoken with regard to the results which follow an early diagnosis and proper treatment. There are some symptoms that lead one to suspect tuberculosis—one at least that has not been mentioned, and that

is indigestion. The loss of appetite is quite common, but indigestion is a symptom which antedates the loss of appetite. I have observed in quite a large number of cases that the first symptom of impaired health has been indigestion, and in women this impaired indigestion has been more noticable at the menstrual period, and I have on record a number of cases that bear out this statement. With regard to the class of cases that should lead us to suspect pulmonary involvement, I would say in a general way those cases that present to us a group of symptoms, such as we commonly call "run down." Those are the ones to whom we feel we must give a tonic, without any well defined reason for doing so.

A patient that at first suggests a tonic had best be examined before you prescribe anything, and a patient whose digestion is not improved by a prescription or two, had better have their lungs looked to for the trouble. It is a disease in which you get circumscribed areas of disturbed breathing signs; prolonged expiration over the area in which the tubercle has already erupted, but there would not be prolonged expiration on the corresponding point on the other side. The slightest change may be detected by comparing the two sides. There are some slight variations in the normal lungs which it will be necessary to take into account. You may make yourself sure by an injection of tuberculin. I have yet to see the first ill results from it. I have usually given not more than .7 c.c. of purified tuberculin, and in every case of suspected tuberculosis I have had a reaction which lasted in no case more than 36 hours. It is satisfying, mild and sure. There may have been unpleasant results in the experience of other men, but they probably came from excessive doses. I know that some practitioners give more than .7 c.c. I have never given as an initial dose more than .3 c.c., and increase the dose by adding .2 c.c. until I reach .7 c.c. if necessary. At least three days should intervene between doses. I would not hesitate to increase the dose to upward of .2 c.c. if I did not get a reaction to a smaller dose and if I had very strong reason for suspecting the existence of tuberculosis. I believe if you will get some tuberculin and try these cases you will be surprised at the result.

Dr. J. Allison Hodges.—I think this is the most practical question that has come before this body during this session. I know of nothing that has given me more concern as a practitioner of medicine than my inability to diagnose tuberculosis in its incipiency. I did think it was my inefficiency that made it so difficult for me. In later days I have come to the conclusion that it is one of the finest works of diagnosis to be correct and positive in its primary stage. The outward signs are the signboard by which you arrive at some conclusions. I have noticed time and time again in life insurance work that after examining the chest with every possible means of diagnosis I had in hand, I was uncertain, and the only way I could arrive at a conclusion was to put the signs evidenced in that individual in correlation with the symptoms. I do not believe the average man with one examination can possibly arrive at a positive diagnosis in its early stage, and if I had to pick out any one symptom I would say that the thermometer was the standard test and you could not possibly arrive at a conclusion without repeated tests. I believe outside all these signs tuberculin is one of the best aids though not positive, in arriving at a diagnosis. I am not so optimistic as some of these gentlemen; I do not take such a roseate view as some of them. I am willing to give their opinions great weight because some of these gentlemen have had great experience, but I shall agree with Dr. Payne and say that in my practice I have never had anything like 50 per cent. arrested—not 25 per cent., and I have had some patients who have had all the means and appliances and have crossed this continent time and time again and been under the treatment of dozens of the most eminent men, and came back to my hands. I believe if the State Board of Health wishes to do great good this is the field they should labor in. The sound of a case of smallpox would stir us all, yet what is smallpox compared with tuberculosis! I believe the State Board of Health can educate the people of the cities to the fact that they can prevent this disease. There is a line of treatment that I believe we should put into operation when we discover this disease. This is the open air treatment. No doubt some of you have visited that sanitarium in the Black Hills of Germany and seen the cures from the outdoor life and

the high feeding, and the exposure of those individuals to the weather, calm or storm, and you must have been impressed with the good results. I have sent patients to almost every sanitarium in this country, and I have found no better results than was obtained where those patients lived in high, dry atmospheres, might obtain at home. I believe that the future sanitaria for consumptives will be great forests, and individual homes will be built, and the treatment will be carried out along that line, but when patients are not able to take advantage of these institutions, we should impress upon them the advantage of the outdoor life treatment, living absolutely summer and winter, day and night, out of doors, because I believe every one of us can carry that out in a measure. I had a patient two or three days ago who told me he sat last winter hour after hour on a hotel veranda in the Adirondacks with his cover wrapped about him, the snow falling around him, and that man was certainly improved, if not cured.

Dr. J. C. Rodman.—It may be those gentlemen who see a great many cases of tuberculosis every year can make an early diagnosis but to the general practitioner that is very hard to do. Sometimes I have mistaken my diagnosis.

Dr. H. B. Weaver.—Dr. Hodges said he was surprised no one had brought out the open-air treatment, but on yesterday I did say that was the most important element in the treatment of tuberculosis, I insist on my patients living 12 to 18 out of the 24 hours out of doors. Trudo attributes his great success to this line of treatment and he does not use many drugs.

Dr. High.—I do not undertake to discuss the treatment of the disease but I wish to say to those gentlemen who may be interested I fully concur in all that has been said in regard to the open-air treatment. A rule I adopted two years ago was that the patients should sleep with one window open all the time, eternally, no matter what the weather, and during the day the patient is kept out of doors and the only possible hour the patients are allowed in a closed room is at meal time in a hotel. When the weather is warm during the spring and summer and early fall some of them have covered places where they can feel secure and sleep on cot out of doors and I have found that the

results as reported by other physicians has been born out by my experience. The only patient I have had in two years who refused to keep the window up I promptly sent home.

Dr. Munroe.—I am gratified to see the amount of discussion that my paper has brought out and rise to thank the gentlemen who have told us so much about the diagnosis and treatment. I wish to call attention to the fact that the object of my paper was not to go into detailed methods of diagnosis or of treatment, but rather to emphasize the necessity of making a diagnosis early, and having made it to institute at once careful, vigorous, systematic treatment, individualized treatment, directed always to the special needs of the case in hand.

A Few Great Names in Medical History.

By J. EDWIN KERR, M. D., Lilesville, N. C.

Hippocrates, termed the "Father of Medicine" was born in Cos in the firft year of the 80th Olympiad, i. e. 480 B. C. He was a member of the family of the Asclepiadæ and was believed to be either the nineteenth or seventeenth in direct descent from Æsculapius. It is also claimed for him that he was descended from Hercules through his mother Phanerete.

He studied medicine under Heroclides, his father, and Herodicus of Selymbria. In philosophy Gorgias of Leontime and Democritus of Abdera were his masters. His early studies were prosecuted in the famous Asclepion of Cos, and probably also at Cnidas. He traveled extensively and taught and practiced his profession at Athens, Thessaly, Delos and his native island.

He died at Larissa in Thessaly, his age being variously stated as 85, 90, 104 and 109. Hippocrates was the first to cast superstition aside and to base the practice of medicine on the principles of inductive philosophy. It is impossible to trace directly the influence exercised upon him by the great men of his time, but one cannot fail to connect his emancipation of medicine from superstition with the widespread power exercised over Greek life and thought by the living work of Socrates, Plato, Heroditus and Thucydides.

It was a period of great intellectual development and it only

needed a powerful mind such as his to bring to bear upon medicine the same influences which were at work in other sciences. One year in the history of medicine in our day generally marks a discovery, in one branch or another, of very great importance to the human family.

But standing on the eve of the 20th century and looking back 2400 years gives the student of medicine many great events to attract his attention. When we commenced the study of medicine we found it in the state of a rational science. Empiricies and superstitions had passed away and we inherited the unique science as it is taught to-day, forgetting that its completeness has been gathered by the researches of 24 centuries. It must be remembered that his training was not altogether bad although superstition entered so largely into it. He had a great master in Democritus the originator of the doctrine of atoms, and there is every reason to believe that the various "Asclepia" were very carefully conducted hospitals for the sick, possessing a very curious system of case-books in the form of votive tablets left by the patients on which were recorded the symptoms, treatment and result of each case. He had these records at his command and he had the opportunity of observing the system of training and treatment of injuries in the gymnasia. One of his great merits is that he was the first to dissociate medicine from priestcraft and to direct exclusive attention to the natural history of diseases. How strongly his mind revolted against the use of charms, amulets, incantations and such devices appears from his writings, and he has expressly recorded as underlying all his practice the conviction that however diseases may be regarded from the religious point of view they must all be scientifically treated as subject to natural laws. Nor was he anxious to maintain the connection between philosophy and medicine which had long existed in a confused fashion. His knowledge of anatomy, physiology and pathology was necessarily defective. The respect in which the dead body was held by the Greeks, precluded him from practicing dissection; thus we find him writing of the tissues without distinguishing between the various textures of the body, confusing arteries, veins and nerves and speaking vaguely of the muscles as flesh. But when we

come to study his observations on natural history of diseases as presented in the living subject, we recognize at once the presence of a great clinical physician. Hippocrates based his principles and practice on the theory of existence of a spiritual restoring essence or principle, the Vis Medicatrix naturæ in the management of which the art of the physician consisted. This art could, he held, be only obtained by the application of experience not only to disease at large, but to disease in the individual. He strongly deprecated blind empircism. Sydenham puts it, his practice was "the support of enfeebled and the coercion of outrageous nature."

He largely employed powerful medicines and blood-letting, both ordinary, and cupping. He placed great dependence on diet and regimen, and here quaint as many of his directions may now sound, not only in themselves but in the reason given, there is much which is still adhered to at the present day. Although many of the treatises can not be accepted as authentic, we find in them evidence of the acuteness of observation in the manner in which the occurrence of "Critical days" in disease is enunciated. His method of reporting cases is most interesting and instructive. Laenec, to whom we are indebted for Auscultation, freely admits that the idea was suggested to him by the study of Hippocrates who, treating of the presence of morbid fluids in the thorax, gives very particular directions by means of succussion for arriving at an opinion regarding their nature. Although not accurate in the conclusion reached at the time, the value of the method of diagnosis is shown by the retention in modern medicine of the name and the practice of "Hippocratic Succussion." In surgery his writings are important and interesting, but they do not bear the same character of caution as the treatises on medicine—for instance in the essay "On Injuries of the Head," he advocates the operation "of trephining" more strongly and in wider classes of cases than would be warranted by the experience of later times. The Hippocratic collection consists of eighty-seven treatises of which a part only can be accepted as genuine. Some of them are as follows:

1. On Ancient Medicine, 2. The Prognostics, 3. The Aphorism, 4. The Epidemics, 5. On Regimen in Acute Diseases, 7.

On Articulations, 8. On Fractures, 11. Injuries of the Head.

William Harvey, the discoverer of the circulation of the blood, was born at Folkestone on April 1st, 1578. After passing through grammar school of Canterbury, on the 31st of May, 1593, having just entered his sixteenth year, he became pensioner of Caiws College, Cambridge. At 19 he took his B. A. degree and soon after having chosen the profession of medicine he went to study at Padua under Fabricius and Casserius. At the age of 24 Harvey became doctor of medicine April, 1602. Returning to England in the first year of James 1st he settled in London. In the same year Harvey became a candidate of the Royal College of Physicians and was duly admitted a fellow in June, 1607. He was thrice censor of the college. In 1616 —the year of Shakespear's death—he began his course of lectures and first brought forward his views on the movements of the heart and blood. In 1618 he was appointed physician extraordinary to James 1st, and on the next vacancy, physician in ordinary to his successor. In estimating the character and value of the discovery, it is necessary to bear in mind the previous state of knowledge on the subject. Aristotle taught that in man and the higher animals the blood was elaborated from the food in the liver, thence carried to the heart and sent by it through the veins over the body. His successors of the Alexandrian school of medicine further elaborated his system and taught that while the veins carried blood from the heart to the members, the arteries carried a subtle kind of air or spirit. For the practical physician only two changes had been made in this theory of the circulation between the Christian era and the 16th century.

Galen had discovered that the arteries were not as their name implies, merely air-pipes, but that they contained blood as well as vital air or spirit and it had been gradually ascertained that the nerves which arose from the brain and conveyed "animal spirits" to the body were different from the tendons or sinews which attach muscles to bone. First, then, the physicians of the time of Linacre knew that the blood is not stagnant in the body, so did Shakespear and Homer and every augur who inspected the entrails of a victim and every village barber who

breathed a vein. But no one had a conception of a continuous stream returning to its source (a circulation in the true sense of word) either in the system or in the lungs. The movements of the blood were in fact thought to be slow and irregular in direction as air in a house or the circulation of a crowd on the streets of a city. Secondly, they taught that one kind of blood flowed from the liver to the right ventricle of the heart and thence to the lungs and general system by the veins, and that another kind flowed from the left ventricle to the lungs and general system by the arteries. Thirdly, they supposed that the septum of the heart was pervious and allowed blood to pass directly from the right to the left side. Fourthly, they had no conception of the functions of the heart as the motor power of the movement of the blood. They doubted whether its substance was muscular, they supposed its pulsation to be due to expansion of the spirits it contained. They believed the only dynamic effect which it had on the blood to be sucking it in during its disastole, and they supposed the chief use of its constant movements to be the due mixture of blood and spirits. Of the great anatomists of the 16th century Sylvius described the valves of the veins.

The way, then, to Harvey's great work had been paved by the discovery of the valves in the veins and by that of the lesser circulation. The former due to Sylvius and Fabricius, the latter to Servetus, but the significance of the valves was unsuspected and the fact even of the pulmonary circulation was not generally admitted in its full meaning. In this treatise Harvey proves that it is the contraction not the dilatation of the heart which coincides with the pulse and that the ventricles are true muscular sacs which squeeze the blood which they contain into the aorta and pulmonary artery. That the pulse is not produced by the arteries enlarging and filling, but by the arteries being filled with blood and so enlarging. That there are no pores in the septum of the heart, so that the whole blood in the right ventricle is sent to the lungs and round the pulmonary veins to the left ventricle. That the blood in the arteries and that in the veins is the same blood. The dynamic starting point of the blood is the heart, not the liver. In one point only was the de-

monstration of the circulation incomplete. Harvey could not discover the capillary channels by which the blood passes from the arteries to veins. This gap in the circulation was supplied several years later by the great anatomist Malpighi, who in 1661 saw in the lungs of a frog by the newly invented microscope how the blood passes from the one set of vessels to the other. Harvey saw all that could be seen by the unaided eye in his observation on the living animals. Malpighi, only four years after Harvey's death, by another observation on a living animal, completed the splendid chain of evidence. Harvey was greater than Malpighi.

John Hunter, Physiologist and Surgeon, was born February the 13th, 1728, at Long Calderwood in the parish of East Kilbridge, Lenarkshire. He was the son of John and Agnes Hunter and was the youngest of ten children. Hunter is said to have made but little progress at school being averse to its restraints and pursuits and fond of country amusements. Being desirous at length of some settled occupation he obtained from his brother, William permission to aid, under Mr. Symonds, in making dissections in his anatomical school then the most celebrated in London, intending should he be unsuccessful there to enter the army. He arrived accordingly in the metropolis in September, 1748. After succeeding beyond expectation with dissection of the muscles of an arm, he was entrusted with a similar part injected and from the excellency of his second essay, Dr. Hunter predicted that he would become a good anatomist. Seemingly John Hunter had received no instruction in preparation for the special course of life upon which he had entered. His brother with whom he was now intimately associated was one of the most brilliant exponents of medical science and enjoyed the society of the best cultured men of the age; but that it was through this circumstance that as stated by R. A. Stafford, "he was taught to think" and that his mind as has been surmised had previous to his coming to London been idle, heedless and aimless can hardly be concluded in the face of what the future revealed of the practical and inquiring turn and the originality of his mental disposition.

Rather we may assume with Cooper that Hunter was naturally

gifted with powers of mind which rendered him to some extent independent of the training required by less extraordinary intellects. Dr. Ridge, speaking of Hunter's permitted truancy from the grammer school, argues that early tuition and attainments at least of the kind imparted being inconsistent with a natural education of the sense, are not favorable to the production of extraordinary genius.

Hunter's power of estimating what was worth doing and what could be done is by Dr. Maxon ascribed in part to his being "a man who had a free youth not over-taught nor over-strained, and if it be true that the early part of life the school time, has long been spent in pursuits which ministers but little to the culture of the mind or to the communication and reception of knowledge useful to any class of society in proportion to the time consumed," it is possible that his dislike to scholastic exercises may have served to protect Hunter from influences opposed to that very endowment which made him preeminent as a teacher, namely, the power of perceiving the relation of numerous individual facts as illustrations of general principles.

Hard-working and singularly patient and skillful in dissection Hunter had by his second winter in London acquired sufficient anatomical knowledge to be entrusted with the charge of his brothers's practical class with the members of which as also with the resurrection men he was a universal favorite. In the summer months of 1749-50 at Chelsea Military Hospital he attended the lectures and operations of Chesselden on whose retirement in the following year he became a surgeon's pupil at St. Bartholomew's where Pott was one of the senior surgeons. In the summer of 1752 he visited Scotland. Home and Ottley state that Hunter began in 1654 to assist his brother as his partner in lecturing; according however to the European Magazine for 1782 the office of lecturer was offered to Hunter by his brother in 1758 but declined by him on account of the insuperable embarrassment and objection which he felt to speaking in public.

In 1733 he became a surgeon's pupil at St. George's where he was appointed house surgeon in 1756. During the period of his connection with Dr. Hunter's school he in addition to other labors solved the problem of the descent of the testis in the

foetus traced the ramifications of the nasal and olfactory nerves within the nose and experimentally tested the question whether veins could act as absorbents. Studied the formation of pus and the nature of the placental circulation and with his brother earned the chief merit of practically proving the function and importance of the lymphatics in the animal economy. On June 5, 1755 he was induced to enter as a gentleman commoner at St. Mary's Hall, Oxford, but his true instincts would not permit him to use his own expression "to stuff Latin and Greek at the university." Some three and thirty years later he thus significantly wrote of an opponent: "Jesse Foote accuses me of not understanding the dead languages, but I could teach him that on the dead body which he never knew in any language dead or living."

An attack of inflammation of the lungs in the spring of 1756 apparently caused by over-work, having produced symptoms threatening consumption, by which the promising medical career of his brother James had been cut short, Hunter with a view of residence abroad for a season obtained from Mr. Adair in October, 1760, the appointment of staff surgeon in Hodgson and Keppels expedition to Belleisle, and with this he sailed in 1761. In the following year he served with the English forces on the frontier of Portugal. Whilst with the army he acquired the extensive knowledge of gun-shot wounds embodied in his important treatises on that subject published in 1794, in which amongst other matters of moment he insists on the rejection of the indiscriminate practice of dilating with the knife followed almost universally by the surgeons of his time. When not engaged in the active duties of his profession he occupied himself with physiological and other scientific researches. Thus in 1761 off Belleisle the conditions of the coagulation of the blood were among the subject of his inquiries. Later, on land, he continued the study of human anatomy and arranged his notes and memoranda on inflammation. He also ascertained by experiment that digestion does not take place in snakes and lizzards during hibernation, and observes that enforced vigorous movement at that season proves fatal to such animals, the waste so occasioned not being compensated; whence he drew the inference that in diminution of a power of a part attendant on mortification to resort

to stimulants which increase action without giving real strength, is inadvisable. A manuscript catalogue by Hunter, probably written soon after his return from Portugal, shows that he had already made a collection of about two hundred specimens of natural and morbid structures. On arriving in England early in 1763, Hunter having retired from the army on half pay, took a house in Golden Square and commenced the career of a London surgeon. Most of the metropolitan practice at the time was held by Pott, Hawkins, Sharpe, Warner, Adair and Thompkins, and Hunter sought to eke out his at first slender income by teaching practical anatomy and operative surgery to a private class. His leisure was devoted to the study of comparative anatomy, to procure subjects for which he obtained the refusal of animals dying in the Tower menagerie and in various traveling zoological collections. In connection with his rupture of a tendo Achillis in 1767, he performed on dogs several experiments which with the illustrations in his museum of the reunion of such structures after division, laid the foundation of the modern practice of cutting through tendons for the relief of distorted and contracted joints. In the same year he was made a fellow of the Royal Society. His first contribution to the Philosophical Transaction with the exception of a supplement to a paper by J. Ellis in the volume for 1766, was an essay on post mortem digestion of the stomach, written at the request of Pringle and read June 18, 1772, in which he first correctly explained that phenomenon as a result of the action of the gastric juice. Among his pupils were Edward Jenner, Guy, Kingston, Physic, Everad, Home, Lynn and Sir Astley Cooper. From the high reputation in their profession which these one and all attained, some estimate may be formed of the weight and value of Hunter's personal influence and teaching. From 1772 till his death Hunter resided during autumn at a house built by him at Earles Court, Brampton, where most of his biological researches were carried on. There he kept for the purpose of study and experiment the fishes, lizzards, blackbirds, hedgehogs and other animals sent him from time to time by Jenner, tame pheasants, partridges, at least one eagle, toads, silk worms and many more creatures obtained from every quarter of the globe. Bees he had under observation 20

years. Hornets and wasps were also diligently studied by him. On two occasions his life was in risk from his pets, once in wrestling with a young bull, and again when he fearlessly took back to their dens two leopards which had broken loose among his dogs. Perhaps no man busily engaged in professional practice has ever conducted so many physiological and pathological investigations in the animal world as Hunter. In his toxicological and other researches in which his experience had led him to believe that the effect of noxious drugs are nearly similar in the brute creation and in man, he had already in 1780, as he states, "poisoned some thousands of animals." In January, 1776, Hunter was appointed surgeon extraordinary to the King.

Hunter in 1780 read before the Royal Society a paper in which he laid claim to have been the first to make out the nature of the utero-placental circulation. He and his brother were estranged on account of this discovery, both claiming the honor until the time of his brother William's last illness when he obtained permission to visit him. John Hunter died on the 16th of October, 1793.

Edward Jenner, the discoverer of vaccination, was born at Berkley, Gloucestershire, on May 17th, 1749. His father, the Rev. Stephen Jenner, rector of Rockhampton and vicar of Berkley, came of a family that had been long established in that country and was possessed of considerable landed property. He died when Edward was only six years old, but his place was admirably taken by his eldest son, the Rev. Stephen Jenner, who brought his brother up with fraternal care and tenderness.

Edward received his early education in local schools at Wotton-under-Edge and Cirencester, where he already showed a strong taste for natural history. The medical profession having been selected for him he began his studies under Mr. Ludlow, a surgeon of Sodbury, near Bristol; but in his 21st year he proceeded to London where he became a favorite pupil of the celebrated John Hunter, in whose home he resided for two years. During this period he was employed by Sir Joseph Banks to arrange and prepare the valuable zoological specimens which he had brought back from Captain Cook's first voyage in 1771. He must have acquitted himself satisfactorily in this task, since he was offered

the post of naturalist in the second expedition, but declined it as well as other advantageous offers, preferring to practice his profession in his native place and near his eldest brother to whom he was much attached. His speedy success in practice did not engross his intellectual activity. He was principal founder of a local medical society to which he contributed several papers of marked ability, in one of which he apparently anticipated later discoveries concerning rheumatic inflammation of the heart. He maintained a correspondence with John Hunter, under whose direction he investigated various points in biology. He was a great favorite in general society from his agreeable and attractive conversation and the many accomplishments he possessed. Then he was a fair musician, both as a part singer and as a performer on the violin and flute, and a very successful writer after the fashion of that time. In 1788 he married and in 1792 he resolved to confine himself to practicing as a physician and accordingly obtained the degree of Doctor of Medicine from St. Andrews.

Finding that Berkley could not support a physician, he begun a few years later to visit Cheltenham annually. Meanwhile the discovery that was to immortalize his memory had been slowly maturing in his mind. When only an apprentice at Sodbury his attention had been directed to the relations between cowpox and smallpox in connection with a popular belief which he found current in Gloucestershire as to the antagonism between these two diseases. During his stay in London he appears to have mentioned the thing repeatedly to Hunter, who being engrossed by other important pursuits was not so strongly persuaded as Jenner was of its possible importance, yet spoke of it to his friends and in his lectures. After he began practice in Berkley, Jenner was always accustomed to enquire what his professional brethren thought of it, but he found that when medical men had noticed the popular report at all they supposed it to be based on imperfect inductions of facts.

His first careful investigation of the subject dates from about 1775, and five years elapsed before he had succeeded in clearing away the most perplexing difficulties by which he was surrounded. He first satisfied himself that the difficult forms of dis-

ease had been hitherto confounded under the term cowpox only one of which protected against smallpox, and that many of the cases of failure were to be thus accounted for, and his next step was to ascertain that the true cowpox itself only protects when communicated at a particular stage of the disease. At the same time he came to the conclusion that the "grease" of horses is the same disease as cowpox and smallpox, each being modified by the organism in which it was developed, an opinion which is generally held at the present day. For many years cowpox being scarce in his country he had no opportunity of inoculating the disease and so putting his discovery to the test, but he did all he could in the way of collecting information and communicating what he had learned.

Thus in 1788 he carried a drawing of the cowpox as seen on the hands of a milkmaid in London and showed it to Sir E. Home and others, who agreed that it was "an interesting and curious subject," but by no means realized its practical importance. At length, on the 14th of May, 1796, he was able to inoculate James Phipps, a boy about eight years old, with cowpox matter. On the first of the following July the boy was carefully inoculated with variolous matter, but as Jenner had predicted no smallpox followed.

The discovery was now complete, but he desired to act without precipitation and was unable to repeat his experiment until 1798, owing to the disappearance of cowpox from the dairies. He then repeated his inocculation with the utmost care and prepared a pamphlet which should announce his discovery to the world. Before publishing it, however, he thought it well to visit London so as to demonstrate the truth of his assertion to his friends, but he remained in London nearly three months without being able to find any person who would submit to be vaccinated. Soon after he had returned home, however, Mr. Cline, an eminent surgeon, inoculated some vaccine matter over the diseased hip-joint of a child thinking the counter irritation might be useful and found the patient afterwards incapable of acquiring smallpox.

In the Autumn of the same year Jenner met with the first opposition to vaccination, this was the more formidable because

it proceeded from Dr. Ingenhawz, a celebrated physician and man of science.

But meanwhile Mr. Cline's case and his advocacy of vaccination brought it much more decidedly before the medical profession, of whom the majority were prudent enough to suspend their judgment until they had ample information—in this instance a very worthy decision.

But besides these there were two noisy and troublesome factions. One of which opposed vaccination as an useless and dangerous practice, while the other endangered its success much more by their rash and self seeking advocacy. At the head of the latter was one Dr. Pearson, who, in November, 1798, published a pamphlet speculating upon the subject before even seeing a case of cowpox and afterward endeavored, by lecturing on the subject and supplying the virus, to put himself forward as the chief agent in the cause. The matter which he distributed which had been derived from cows that were found to be infected in London, was found frequently to produce not the slight disease described by Jenner, but more or less severe eruptions resembling smallpox. Jenner concluded at once that this was due to an accidental contamination of vaccine with variolous matter and a visit to London in the Spring of 1799 convinced him that this was the case. In the course of this year the practice of vaccination spread over England, being urged principally by non-professional persons of position, and towards its close attempts were made to found institutions for gratuitious vaccination and for supplying lymph to all who might apply for it. Pearson proposed to establish one of these in London without Jenner's knowledge, in which he offered him the post of honorary corresponding physician. On learning this scheme to supplant him and to carry on an institution for public vaccination on principles which he knew to be partly erroneous, Jenner once more visited London early in 1800 where he had influence enough to secure the abandonment of the project.

He was afterwards presented to the King, the Queen and the Prince of Wales, whose encouragement materially aided the spread of vaccination in England. Meanwhile it had made rapid progress in the United States where it was introduced by

Dr. Waterhouse, the Professor of Physics at Cambridge, Mass., and on the continent of Europe where it was at first diffused by Dr. De Carro, of Vienna, who practiced it with the greatest zeal and discretion, and thence spread to Geneva. In consequence of the war between England and France the discovery was later in reaching Paris, but its importance once realized it spread rapidly over France, Spain and Italy. Perhaps the most striking is the expedition which was sent out by the court of Spain in 1803 for the purpose of diffusing cowpox through all the Spanish possessions in the old and new worlds and which returned in three years, having circumnavigated the globe and succeeded beyond its utmost expectations. Many of the expressions of enthusiasm seem to us strained and almost ridiculous.

Thus we read with surprise how clergymen in Geneva and Holland urged vaccination upon their parishioners from the pulpit; how in Sicily, South America and Naples religious processions were formed for the purpose of receiving it; how the anniversary of Jenner's birthday or of the successful vaccination of James Phipps was for many years celebrated as a feast in Germany and how the Empress of Russia caused the first child operated upon to receive the name of "Vaccinoff" and to be educated at the public expense.

The truth is that we who live in that security from the horrible and universal plague of small-pox for which we are indebted to Jenner's immortal discovery cannot realize the greatness of the blessing he conferred upon mankind.

This universal enthusiasm caused vaccination to spread over the whole world in six years. This conclusion might be drawn from the foregoing remarks; that though great as Jenner's mind was, the assertion that in the year 1799 vaccination spread over England being urged principally by non-professional persons of position, it seems evident that his humble professional brethren of his day did not intend that he should live to enjoy his great discovery, the emancipation of death to so many of the human race, but preferred that death should remove him before they ascribed to him this great distinction. The devil will undoubtedly get many for doing what Jacob did, "stealing Esau's birthright."

ANÆSTHESIA.

In the history of medicine are found many discoveries in the way of operations and improved instruments for surgical work. The minds of surgeons seemed to be directed more toward the anatomy of the body of what could be removed without killing and what could not.

There seemed to be paid little attention to lessening the pain during operations. Of course whiskey and morphine were used but not until the discovery, or preferably, the use of ether, by Dr. Wm. T. G. Morton, and chloroform by Sir James Y. Simpson. Most of us have lived in the days of anæsthesia and do not know so much of the terrors of surgery in former years. It is said of Sir James Y. Simpson that after beginning his professional studies he was so affected by seeing the terrible agony of a poor highland woman under amputation of the breast that he resolved to abandon a medical career and seek other occupation. Happily his intention was reconsidered and he returned to his studies asking himself the question, can no help be found to relieve some of its horrors. And as every one knows, in a few years he became a high priest of anæsthesia.

No braver or more gallant gentleman ever lived than Admiral Viscount Nelson. At the siege of Cadiz he lost an eye, and after his right elbow had been shattered by a French bullet at Teneriffe he manifested the utmost courage, refusing to be taken to the nearest ship lest the sight of his injury should alarm the wife of a fellow officer whose own fate was uncertain, and when his own ship was reached he climbed up its side without assistance, saying: "Tell the surgeon to make haste and get his instruments; I know I must lose my right arm, and the sooner it is off the better." And yet so painfully was he affected by the coldness of the operator's knife that when next going into action at the famous battle of the Nile he gave a standing order to his surgeons that hot water should always be kept in readiness during an engagement, so that if another operation should be required he might at least have the poor comfort of being cut with warm instruments.

There were many other terrors connected with operations besides the pain inflicted by cutting. There is danger of cut-

ting the arteries, and if by accident this was done there was no way to control hemorrhage except with hot oil, red-hot irons, or the cautery; these surely must have been next to death.

The bravest deeds that may be recorded in the annals of all wars and in the history of all ages, will not tell of any good whose benefits have been reaped over and over again more than the addition of ether and chloroform to surgical practice.

He whose life work could add one thousandth part of good to suffering humanity as the life work of William T. G. Morton and Sir James Y. Simpson, should consider it well lived. The world will little note, nor long remember what we say here, but lasting is the good which can benefit forever our race. And the world would say for us what it said for Nathan Hale, a young Connecticut soldier, who volunteered to go within the British lines on Long Island that he might learn the position of the enemy. On the way back he was arrested. No trial was allowed him. He was not shot like a soldier, but was hung.

"I only regret," he said, as he was about to die, "that I have but one life to give to my country."

So harmless is anæsthesia, that Snow laid it down as an axiom that if an operation must be performed, however serious it might be, the administration of an anæsthetic was justifiable on the whole, and that rule has been pretty generally adopted without any manifest bad results.

Lister's Germ Theory.—The germ theory which has come so prominently before the medical world of to-day is another discovery which has already revolutionized surgery, and its future may be brighter than its wonderful past and present has been. The germ theory brings us to a beautiful page in medical history. Lister, its great founder and exponent, began his experiments in 1860 at Glasgow and continued them after his removal to the chair of clinical surgery in Edinburgh.

DISCUSSION.

Dr. B. K. Hays.—I am glad the gentleman has seen fit to read the paper on the subject he has chosen. I have been convinced that the members of the profession do not take sufficient interest in our own history. If we would have enthusiasm on any

subject we must know the history of the subject, what has been done on the subject. We would be ashamed not to know where Napoleon was born and what he did, we would be ashamed not to know the Greek philosophers, and yet how many of us are familiar with the life and work of Hippocrates, to whom we owe more honor than to all the Greeks that ever lived. We know of the great Romans yet know very little of one great man from among our number, Galen. We know that the members of our profession struggled against ignorance and superstition, struggled to accomplish great good in the same way in which we are now struggling, and if we would take courage, and become enthusiastic, undertake to do more than we are now doing, there is no better way to gain enthusiasm than studying the history of the past of our great men. 1616 is familiar in the annals of history as the year in which the immortal Shakespere yielded up his life. And yet how many know that is the year in which Harvey announced the circulation of the blood. While Napoleon was drenching the world with blood, Jenner accomplished more than any other one man that lived. In 1809 an unknown man went to a cabin home in a neighboring State, without assistance, without anæsthetics, threatened by a mob, McDowell performed the first laparotomy in the annals of surgery and as a result of that work hundreds and thousands of men are walking about to-day who would have gone to untimely graves. You are familiar with the names of the men who have gone down as martyrs; of infinitely more benefit to mankind are the works of Simms, Gross, Hunter McGuire and others with whom I am sorry to say we are not more familiar. Here within our own State there is no name more dear to those who sit within the sound of my voice than Vance. His name will go down in history as perhaps one of the greatest men North Carolina has yet produced, yet I say unto you we lost from this society last year, a man who should be as dear to posterity as Vance—it is useless for me to tell you I refer to Charles O'Hagan. Since the Society met last, within 15 miles of my home, there have passed away three men whose names will be discussed here at the proper time. They are men who never acquired greatness as the world counts greatness, their business was to build up, to save, to benefit those with

whom they came in contact; two have been president of the Society—Drs. William Cheatham of Henderson, and Jno. Tucker of Henderson. It seems to me that their names are worthy of a place in history. I wish to speak of another man who has lived in my county, Dr. John W. Booth, who was a man of education, of scientific acquirements, who labored hard for those among whom he lived, a man whose name is called blessed among those where he lived, a man whose name should find a place in the history of medicine in North Carolina.

Dr. H. W. Lewis.—In listening to the most interesting paper I must confess a feeling of some disappointment when he reached the subject of anæsthesia. The late Marion Simms treated that subject most thoroughly, and gave Long the credit he deserves.

Treatment of Tuberculosis.

By H. B. WEAVER, M. D., Asheville, N. C.

Considering that tuberculosis is the most prevalent and fatal disease that affects the human race; that seven per cent. of all deaths are attributable to this disease, which sum is more than all other contagious diseases put together, it must be admitted that efforts at prevention and cure are in the highest degree needful and proper. At the same time a thorough knowledge of the true nature of various forms of tuberculosis with their pathological lesions, can alone lead to a correct understanding of the principles governing its successful treatment.

It is proper to state in the outset that the consensus of medical opinion is practically unanimous regarding the following facts:

1. That pulmonary tuberculosis, which is by a large majority the most common form, is an infectious, inflammatory disease, characterized by the presence of new-formed granular tissues within the intestitial tissues of the lungs in the form of a tubercle mass with a germ nucleus.

2. That there are two prime factors in the causation of every case of consumption. (1) the *specific* or essential cause is the tubercle bacillus, an ærobic non-motile, rod-shaped, vegetable micro-organism which is contained in the dried sputum of a

consumptive and is conveyed to the lungs of a non-consumptive by inhalation of this dried and pulverized phthisical sputum which in most parts of the world floats as dust in the air in such quantities that it is taken in with the breath of everybody.

But this special cause is powerless to act unless there be a certain *predisposition* to the disease, inherited or acquired.

The startling discovery of the cause of tuberculosis, announced first in 1882, by Koch, has so revolutionized medical thought, that to-day hereditary tuberculosis is no longer regarded as an etiological factor, there being but 18 authentic cases of congenital tuberculosis on record. And in those rare cases the infection is not transmitted from the parent to child; it is only *acquired*, not inherited, *in utero* through the placental circulation, for there can be no tuberculosis without tubercle bacilli, and the tubercle bacilli, like all other bacteria, cannot be inherited, but a susceptibility to their invasion can be. Or, rather some vice of tissue—some abberation of function—can certainly be transmitted from parent to child. This susceptibility can be more fully developed under the influence of certain co-operating conditions, which may properly be called predisposing causes. Such are excessive confinement in doors in bad air, overwork, mental strain, poor food, moist soil, certain trades and occupations which are debilitating and enervating. On the other hand, these predisposing causes probably never produce consumption without the fructifying influence of the specific cause, Koch's tubercle bacillus. The existence and co-operation of both are essential in the production of every case of the disease. Without this predisposition or diathesis which may be innate or acquired, any individual may breathe in, or swallow with food, millions of bacilli tuberculosis with impunity; while with this diathesis or predisposition he will escape only, if he can escape contact with the micro-organisms, which in most parts of the world is impossible for any length of time. The great Christian parable of the sower and the seed, some falling on good ground, spring up and bring forth much fruit, and some on stony ground and perishing, is here particularly applicable.

Few subjects of late in pathology have been the source of

more careful investigation and learned discussion, than the origin of the histological elements of the tubercle.

Baumgarten and others first taught that the fixed cells in the connective tissue underwent karyokinetic changes which were the source of the giant cells. Metschinkoff and his school with equal emphasis declares that they find their origin not in the fixed cells, but exclusively in the mononeuclear leucocytes. It seems, therefore, that upon a review of the whole subject that the latter view is more tenable in holding that the fixed tissue cells could not have played any role in the formation of these particular tubercules, but they were made up entirely from the leucocytes, which necessitates a wider view of the genesis of the tubercle and consequently a change in regard to the therapeusis. This idea of tubercle genesis, so justly represents the views of the writer expressed on a former occasion, that we feel a pardonable pride in repeating, in part, what was then said.

"Pulmonary tuberculosis is primarily, in a great majority of cases, a local disease, involving but a small portion of one lobe of the lung. This process follows well defined rites. Catarrhal affections of the bronchial membranes, regularly accompanied with superficial denudation of the epithelium, serves as portals for the entrance and implantation of the spores of the bacillus. From this focus they advance through the lymph spaces and lymph channels into and through the blood, and rarely, if ever, along the neuclus surface from the mouth to the air cells."

Birch Hirschfeld, Pathologist in Liepzig University, was enabled, before his late demise, to complete and publish an important contribution to our knowledge of tuberculosis. The aim of the author was to determine beyond reasonable doubt the primary lesion of pulmonary tuberculosis.

After many years of patient toil in laboratory research upon ample autopsy material this learned pathologist believed that he had shown beyond the possibility of doubt, that *the primary lesion* of consumption is an *ordinary tuberculous ulcer occurring in the wall of a medium-sized bronchus*, and this typical bronchial ulcer was plainly contracted from inhaled bacilli. He was further able to demonstrate that in most instances the infection occurred in a branch of the "so-called posterior apical bronchus,"

whereas, formerly the entire apex was regarded as a predeliction site for the development of phthisis. The author shows that the posterior apical branch is the area of the least actual resistance; "the dead expanse" of lung tissue, doubtless because it is in close relation with immobile structures of the vertebral column, while the apex proper sustains an adequate degree of ventilation and exchange of gases. Therefore for the want of due expansion and contraction at this point where infection does enter it is certain to be retained.

He goes on to say: "Owing to the absence of a strong inspiratory current, the tubercle bacilli never reach the air cells, but are deposited in the medium-sized bronchi, usually at the point of ramification into the finer bronchioles. The affected bronchus becomes occluded and the air cells beyond it undergo atelectasis and atrophy." The pathological alterations up to this point, we believe constitutes primary tuberculosis of the lungs, and most cases of consumption begin in this manner; yet so rapid and so manifold are the forms which they assume thereafter, that the actual initial stage of the disease has hitherto escaped recognition. This classical picture might be prolonged from the evolution of the tubercle through the processes of infiltration, caseation, incapsulation or cavation; but suffice it to say that the symptoms complex of the various forms and stages of the disease should be so thoroughly understood by the alert physician that he may be able to diagnose the different graduations as he meets them and apply the therapeutic agent applicable to each stage of the disease. Especially is this the case in the earlier recognition of the disease in its incipiency when there are great and just reasons to believe in a permanent arrest of the disease, and before the patient is hopelessly doomed by destructive lesions caused by the actual softening and liquefaction of degenerated tubercles. Along this line, naturally, two methods suggest themselves in the prevention and cure of the disease. The first aims at the destruction of the germs either before or after they have entered the body. The second is to so modify the soil that they will refuse to grow in it; in other words to prevent or remove the diathesis or predisposition by invigorating the system so that the tissues will remain sterile so

far as the growth of the bacilli are concerned, affording them no proper nutriment. The once fertile soil having become sterile, the bacilli present die and are cast off, and new ones, although ingress is easy, yet fall on stony ground and perish. The greatest success in the treatment of phthisis in modern times has been along these latter lines. The bright hopes for the future shines in the same direction. Then, to cure tuberculosis, it is necessary: 1st, to restore the physiological functions of the body to a normal condition; 2d, to bring about a higher nutrition; and 3d, to establish immunity. For the accomplishment of these results we consider in every case of a tuberculous subject the following methods of treatment: dietetic, hygienic and medicinal. The first two are so old and yet so new, that the merest tyro, we think, should know all about them in every detail; yet no questions are so diversified, in regard to treatment of consumption, as diet and hygiene. To say that a patient must have a good generous diet puts the question but mildly. The great importance of the nutrition of the patient is admitted on every hand,and efforts have never been wanting in devising dietaries which should serve the purpose better than any other. The nutritious quality of the food should be kept as the prime object, while its palatable preparation and the patient's relish should not be lost sight of in the broad and comprehensive study of this phase of the subject. The great advantage of combining in one diet all the essential food constituents required by the organism, in addition to comparative ease of digestion, has led naturally to this almost universal employment of milk as an exclusive diet on account of representing, in fact, a true *mixed diet*, in which fats are well represented. Other foods rich in proteids should be allowed, such as eggs and beef, out of which the impoverished cell elements of the tuberculosis body draw energising protoplasm; while if we wish to gain in weight fats and carbohydrates must be taken liberally. But I see no cause for making the taking of them a source of discomfort and disgust to the patient, so long as I can accomplish my object in giving food to my patients in a form which they eat with more or less relish. If we judge the improvement of patients' nutrition by gain in weight, I do not remember a single case in my practice who should gain on an

exclusive meat and egg diet. But not so with milk; and when a patient could take large quantities, 4 to 6 quarts a day, the gain in weight is remarkable. No artificial food should be used to such an extent that it becomes monotonous and disgusting to the patient. Aversion to fats is the common experience with consumptives. If my patients will not take cod-liver oil or beef fats I insist on plenty of butter or cream or bacon or cold boiled ham. He will make a choice of some one of these. A like position is proper with meats and vegetables; the only care is that the preparation of food is good and readily digestable.

The hygienic control of patients should be disciplinary as regards to details; the most important factors being the complete regulation of rest and exercise, and above all, the living as much as possible in the *open air*. This, the most important method of all, is rarely employed to the degree it so richly deserves, and in many instances it is entirely neglected in the belief that it can only be employed at climatic resorts. This presupposes that a climate should be sought which has the greatest number of days of sunshine, and where the air is moderately moist and moderately dry, a place where there is not too sudden change in temperature and wind is not fierce and penetrating, but cool and invigorating in winter time and not too hot nor enervating in summer.

Dr. Osler says that more of these desirable qualities are found at an average altitude of 2,500 feet than anywhere else, such as the "Adirondacks or Asheville, N. C." The patient should be taught that the open air treatment means that at least as many as twelve hours of twenty-four should be spent out of doors, either in walking, riding or sitting. If he is not able to do either of these he must then recline in chairs or lie on cot well covered with woolen or silk wraps, protected from draughts of air, and at night sleep with *windows open*.

The medicinal treatment resolves itself into symptomatic and specific medication.

The consensus of medical opinion and practice of to-day is that, among drugs, the chief place is given to creosote and its derivatives. As regards its action it is still a moot question. Those who believe it to have direct germicidal action on the

bacilli in the tubercular lesions, or the power of preventing their growth in healthy tissues surrounding these lesions, are advocates of the larger doses. Those who look upon creosote as valuable chiefly for promoting appetite and digestion and general nutrition, consider small or moderate doses all sufficient. My own experience has taught me that moderate doses is the best, beginning with 5 drops and gradually increasing to 30 or 40 drops three times daily. This dosage I maintain unless there are signs of gastric disturbances; then I decrease or stop it altogether for a time.

The method of administering creosote is of some importance, especially when considerable doses are to be given for long periods of time. The drug to most people is disagreeable, particularly at first, and every effort should be made to avoid disgusting the patient at the start. It is usually given in mixtures of cod-liver oil, milk or hot water. But undoubtedly to my mind, the best way to give it is in capsules, to be filled by the patient at the time of taking. It should always be highly diluted with a glass of water or milk at the time of taking. If in any case the pure creosote (Morson's) cannot be tolerated, then one of its derivatives, *duotal* or *creosotal*, should be substituted. Five to 10 grains of carbonate guiaiacol or the same number of drops of carbonate of creosote, both in capsules, should be given 3 times daily. I do not use creosote in incipient cases, but in later cases, especially where there is much catarrh of mucous membranes and *mixed infection*. I continue its use until the symptoms have subsided.

Next to cresote stand the iodine compounds, chief of which are idoform, aristol and euphoren. On account of their disturbing sometimes the digestive functions they should be used in inunctions. On account of stability and freedom from odor I recommend the use of euphoren, in 10 to 20 per cent. ointment well rubbed in twice daily.

Among the many drugs which can be used for building up purposes and restoring the equilibrium of different organs, which deserve special mention, are iron, arsenic, phosphorus, digitalis and strychnine.

Whenever and wherever a drug can be used to correct a fault

or supply a defect in functions of any organ in the body it is good practice to employ it. We do not mean to suggest the use of all the above-mentioned drugs in the treatment of any case of tuberculosis, for no remedy should be employed except where there is a positive indication for it.

In almost every case of phthisis there is existing anæmia, resulting from a decrease in the hemoglobin of the blood as well as a decrease in number and destruction of the blood cells. Here iron and arsenic fill a want that no other remedies can. Blaud's pills modified represent these two minerals in the best possible form.

Contrary to the generally received opinion, it has lately been demonstrated by French physicians (Drs. Robin and Binet) on nearly four hundred patients, that the respiratory exchanges of the gases become greater in phthisical patients than in healthy persons. These results bring out the following facts: "The volume of inspired air increases by 110 per cent. The exhaled carbonic acid per unit weight increases 86 per cent. The total oxygen consumed proportionately to weight 100 per cent." They believe the old name consumption is a good one. They conclude by saying: It is the consumption produced by the abnormal respiratory action, and by *demineralization* of the tissues which prepares the ground for bacillary invasion. So when an individual seems to be predisposed to the disease it is not sufficient to remove the bacillus; it is necessary to treat the patient hygienically and therapeutically in such manner as to modify the functional and nutritive trouble upon which the development of the bacillus depends. This will be found in the regenerating properties of iron and arsenic and tonic and stimulating properties of strychnine and digitalis. Strychnine should be given from beginning to end of most all cases in 1–40 to 1–20 grain doses three times daily, digitalis only when irregularity of weakness of heart demands it. Cod-liver oil should be given as a food in every case that will tolerate and digest it. Alcohol, as a remedy, needs to be mentioned only to be condemned. In some instances it may do good in small quantities in assisting digestion. But in all my experience and observation of hundreds of patients of other physicians, I have seen few instances where alcohol in

any form has been markedly beneficial to the consumptive, from the fact that it has little or no *food* qualities. Now we come to the specific treatment about which there is great controversy.

We said in the outset that the great aim in the treatment of tuberculosis was the production of immunity. And what is immunity? Immunity in its broadest sense means freedom from liability to contract disease. And in tuberculosis it means that condition of the human body in which the specific germ which produced the disease no longer finds suitable soil for its multiplication and growth, hence its deleterious effects upon the tissue elements cease to exist. How shall we then induce immunity? This condition is brought about by the introduction into the human organism of a specific virus or toxin that will so stimulate certain cells or organs that they will in turn produce an antitoxin which will be antidotal to the toxic products of the tubercle bacillus. This toxic agent mostly consists of the germ substance itself, and is not in the nature of an antitoxin produced by the cells of another organism outside the body, the horse for instance. It must be introduced *within the body* and *then* it manufactures a substance which will be antagonistic to the poisonous products of the ptomaines of the bacillus tuberculosis.

Now, then, the question of practical importance is, have we such a substance, and can we safely administer it without any undue reaction which would be dangerous to the patient, and at a time when immunity would be of avail, and before the patient is hopelessly doomed by actual softening, suppurations and exhaustion?

We think that a purified tuberculin such as the Watery Extract of Tubercle Bacilli, manufactured by Von Ruck, meets these indications more fully than any other remedy for which a specific action is claimed. Its action is based on eminently scientific principles; for it has been proven over and over again by experiments on animals by eminent clincians the world over, that artificial immunity can occur under the use of a tuberculin. Now, if immunity *consists* in the *capacity* of the organism *to protect* itself from the deleterious effects of pathogenic micro-organism, and the tubercle bacillus *substance itself* is the *essence*

of the bacterial germs which *immunize* the system there can be no reasonable basis for doubt that tuberculin preparations administered with due regard as to dosage and reactions, will cure at least 80 per cent. of all incipient cases. Trideau, in reviewing his recent work in his sanitarium, claims to have made 75 per cent. cures in first stage cases. He uses this remedy in cases where he feels justified in so doing. Von Ruck reports in his latest work of 1900, 225 cases treated in Winyah Sanitarium, 56 per cent. recoveries in all the stages of the disease and 92 per cent. in first stage cases, all treated with watery extracts.

Charles Denison, of Denver, speaking of this specific treatment in his very latest work, says: "About ten years ago immediately after Koch made known his tuberculin, I commenced the use of it. I soon learned the following facts, three of which we reproduce, as they accord so well with our experience:

1. "That very febrile cases or those wholly unable to exercise are undesirable patients for this form of treatment.

2. "That the dosage and frequency of administration recommended were too severe.

3. "That any increase of intoxication of an already overburdened system, especially in cases of mixed infection, was harmful, and that no remedial effect can be expected in tissues not supplied with circulation and are not alive."

This gives the scope of cases in which the remedy is not needful or effectual. Despite charges of failure of this specific method of treatment, made by hasty and indiscriminating critics, it is becoming more and more to be acknowledged by those physicians who are willing to test the matter, that there *is* a special and a specific stimulation of tubercular living tissue, which is characteristic of a healing process.

Dr. Denison reports 213 cases treated with the different forms of tuberculin and goes on to say: "While of the 94 patients of the combined classes treated with the purified forms of tuberculin (tuberculocidin antiphthiscin T. purificatum) 30 per cent are living and in good condition. Of 45 watery extracts, 28, or 62 per cent., are living in apparent immunity. This is a very good showing for the later refined method of the watery extract. He concludes by saying: I am pleased to have taken part in the

conception of this form of tuberculin, the watery extract, which is a substitute for Koch's emulsion—the tuberculin R.—has proved itself the most perfect and satisfactory aid to specific immunization in tuberculosis thus far discovered."

I have been using the remedy nearly two years. I divide my cases into three classes: (1) A. B. and C., representing 1st, 2d and 3d stages of the disease.

My percentage of cures are: A. 100, B. 73, C. 10, average 60 per cent.

DISCUSSION.

Dr. Burroughs.—The latter part of this paper was entirely at variance with all my experience. I agree with Dr. Weaver in one point: I think that the watery extract of tuberculin is the best preparation that has been offered to the public, and I think its great goodness consists in its extreme weakness. It is the weakest preparation and calculated to do less harm. I would like to ask Dr. Weaver what kind of creosote he used.

Dr. Weaver.—Morson's, the purest form, from the distillation of beechwood chips.

Dr. Borroughs.—That is where you failed to get good results. All wood creosote is full of impurities. Morson puts up two kinds, one from distillation of chips and one from the distillation of tar. The preparation from the distillation of tar can be given in large quantities without any gastric or renal disturbances. I think it is well nigh a specific for tuberculosis.

Dr. Bass.—The question of tuberculosis is a very extensive one. It was said of Alonzo Clark that he had a right to tuberculosis from inheritance, both from his father and mother, who died from it, and history says that he died at a good old age from gout. Are not rheumatism, gout and consumption somewhat similar from a neurotic point of view? In the early symptoms of tuberculosis if we watch for the primary fever and nervous feeling, you will find they come on in that manner. Prof. Mays is a strong believer in the neurotic origin, and starts his treatment with strychnine in the manner of a round on the ladder, in ascending doses, up, up, until he gets to the explosive stage and then lets the strychnine down and goes up again. He can this time get a few rounds higher on the ladder and he makes

the diagram to his class very striking. One case particularly I have in mind where the patient had no tuberculosis in her family, but one branch of her family had been addicted to drink and was neurotic. Her husband died of tuberculosis. He was confined for 18 months perhaps, and she cared for him. She had some pharyngeal trouble, rapid pulse, temperature 99-100 almost every day for 6 months. I put her on beechwood creosote and she went from 5 drops to 40, 3 times a day. She took up to 1-16 grain of strychnine every 4 hours for 3 months, ate 6 raw eggs every day, a pint of raw cream, took iron in the form of Blaud's pills and Basham's mixture. Her pharyngitis improved, and she is now a good healthy woman, married and living comfortably. I was in Philadelphia in January and Dr. Mays was pushing the silver nitrate treatment and he had been injecting the solution over the pneumogastric nerve. One of his patients told me that he was not able to earn his living, and that with the exception of hygiene and diet was the only treatment he gave. He is very enthusiastic about nitrate of silver in his recent book. He said he was not prepared to say how it acted except through the nervous system. What effect the pneumogastric nerve had over the lung tissue he was not prepared to explain.

Nitrate of Silver in Typhoid Fever.

By J. T. J. BATTLE, Greensboro, N. C.

It is with some reluctance and considerable hesitation that I ask your attention for a few moments, to an old remedy in an old disease, but having used it continuously for the past five years, and carefully noting the results to see if I could detect any advantage for it over any other remedies, or the expectant plan, I have arrived at the conclusion that it mitigates the symptoms, shortens the duration of the fever, and prevents relapses. My results have been better with this treatment than with any I have tried, such as quinine, carbolic acid and iodine, sulphocarbolate of zinc, salol, etc. The Woodbridge treatment I have never tested, as the silver was giving me as satisfactory cures as was claimed for that.

In casting around for a reason why this particular drug

should be of any special benefit in this disease, I have the following points to offer in its behalf.

It is antiseptic, and this seems to be an essential aid in the treatment in this malady. All of its combinations and the metal itself is detrimental to germ life.

Its mode of elimination gives it a two-fold effect, for instance it is largely excreted by the liver and intestinal glands, it stimulates the liver and helps to keep up the flow of normal bile, which is so essential, for its antiseptic as well as digestive action, and its favorable effect on the mucous membrane, relieving any catarrhal trouble if any should be present.

The bacillus typhosus abdominal finds its way through the mucous membrane down to the sub-mucosa, and in this location no antiseptic which is confined to the lumen of the bowel has any effect upon them, however the silver solution is quite extensively excreted by the intestinal glands, and in this way it comes in direct contact with the bacillus and thus has an opportunity to get in its germicidal work, beside stimulating the glands to their normal function. If there should be any ulcers or diarrhœa the very salutary influence silver nitrate has over these is too well known to discuss but simply mention it in passing. The nervous system is calmed and quieted and refreshing sleep is the consequence.

In administering it I generally prescribe in pills containing from ¼ to ½ grain every two to four hours according to the urgency of the symptoms, and direct a pill to be given about an hour after albumen water, as peptones readily dissolve the nitrate and this solution does not coagulate albumen. However, if an albuminate should be formed in the stomach it is soluble and will soon be taken into the circulation.

I do not recommend this as a specific, but when a patient is under its influence, baths do not have to be given so often or so long to lower the temperature within the bounds of safety, and sponging has sufficed, without resorting to the pan or tub.

I have had only one patient to relapse, and the mean duration of the fever has been about 19 days, some cases I at first diagnosed as typhoid, which recovered in from 7 to 10 days, are not considered in this paper.

My success has been very satisfactory, so much so that I feel warranted in continuing it.

Report of the Section on Materia Medica and Therapeutics.

Why Have Not Materia Medica and Therapeutics Advanced More Rapidly? And Some Suggestions for their Future Development.

By A. CHEATHAM, M. D., Durham, N. C., Chairman.

The tendency of later years has been for the scientificially inclined members of the profession to devote their time to other departments of study, but the demands of these branches are such that they can no longer be neglected, except at their own peril.

So long as our main and final object is the "prevention and curing" of disease, everything else in medicine is subordinate to Materia Medica and therapeutics. The time has come when we should no longer stand back and ask if this or that preparation was originated by "Homeopath," "Allopath" or any other path, but let the remedy be subjected to the test, and let it stand or fall only on its therapeutic value.

The old and new drugs that go to make up our Materia Medica, should be known to have a definite strength and action. Without a correct Materia Medica how can we hope to build a correct therapeutics? To whom must we look to get a correct Materia? To the manufacturing chemist? No! The commercial spirit of the age is making itself felt in every department of science, but nowhere has it obtained a more complete sway than in medicine. The medical profession is overrun by the multitude of new substances and combination of substances "evolved out of the activity of the brain of the pharmaceutical chemist," and too often reports of "great therapeutical value," all manufactured in the same brain, are put upon the medical profession by the so-called "manufacturing chemist," but who are, too often, in reality, "patent medicine" establishments, using the unsuspect-

ing physician to promote their business at the expense of suffering humanity.

I have a friend who after completing his course at the Philadelphia School of Pharmacy, took a position for fourteen months with one of the leading manufacturing drug houses of this country. He told me that the physicians did not know the true composition of the "open formula" preparations sent out by that house. Take an open formula prescription to any graduated, experienced and practical druggist of your place, and have him make you the preparation, what will you get? Why, a mixture containing the same drugs, but quite a different mixture.

There is possibly no man whose reputation can be more easily injured than a practising physician. The doctor's success depends entirely on his reputation for moral rectitude and professional knowledge, and for this reason he should be more than scrupulously careful in the administration of medicine. He may unite the skill of Osler, Pepper, Loomis and DaCosta in diagnosis, and of Brunton, Wood and Hare in therapeutics, but it is all prostrate before the enlightened intelligence of some dishonest (drug house) druggist. The substitutor is about the basest production of modern commerce. He has no respect for his own good name; his only interest is in his profits. He robs the dying man because he does not give him that to which he is entitled. He steals from the physician his good name, because he has given a worthless drug. The patient has not improved, and the physician's reputation has suffered in consequence. The man who substitutes in any manner, shape or form, can only be held in the eyes of the physician and patient as the meanest and most contemptible of sneak thieves.[1]

We find ourselves constantly after the druggist for counter-prescribing. We have no right to complain so long as we continue to get our therapeutics from the *almanac* or the *outside wrapper* of some ready-made preparation. Dr. Wm. Porter says: "This condition probably could never have grown so bad, if the present-day physicians had a better knowledge of the old reliable drugs, and of the resources of the Pharmacopœia and National Formulary in aiding them to prescribe. The

[1]Extract from editorial in Dominion Med. Monthly, February, 1897.

average physician at graduation feels that his ground work in pharmacology is insufficient. He is timid about prescribing. Consequently he may tend towards skepticism as to the value of drugs; but he is in especial danger of falling a prey to the new drug faker. Unfortunately the chief source of information upon any new substance is the circular of the interested manufacturer, containing it may be the endorsements of physicians obtained undoubtedly in good faith, but usually coupled with so much that is impossible or unnecessary as to lead to its speedy consignment with disgust to the waste basket." [2] If this spirit of commercialism continues, the only qualification that a druggist will have to have is to be able to read a prescription, and the label on the bottle, and write the direction on the label. If the chief source of information upon new drugs are only obtained through *interested manufacturers*, where are we to get information that can be relied upon, concerniug new drugs? Some suggest that the matter is within the power of the *professions of Medicine aud Pharmacy*, and that an *annual* supplement to the U. S. Pharmacopœia be issued for the purpose of giving reliable information concerning new drugs. Others that a proper censorship to act as a directing agent protecting the profession from deception, whose duty it should be to decide as to the therapeutic value, and the ethical character of all, and especially new drugs, and combination of drugs, as well as a host of allied substances offered to the Medical Profession.

Prof. Rowland, of Johns Hopkins University, hit upon the right key when he said: "The knowledge we need concerning the nature of the various diseases, and the true means of combating them, can only be discovered in research laboratories. How many laboratories are there in America for the study of the effects of drugs in health and disease? Where are the physical and biographical laboartories for the study of the fundamental laws of life? We see a few miserable structures here and there occupied by a few starving professors, who are striving to do their best with the feeble means at their disposal." [3]

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[2] American Medical Quarterly Editorial, Sept., 1899.

[3] Mercks' Archives. January 1900.—Extract.

Dr. H. C. Wood, of Philadelphia, says: "We want a multitude of scientific workers to study the effects of toxic and non-toxic agents upon all sorts of animals, including man. Every substance must be studied exhaustively in its effect upon the cellular and gross structures of the heart, blood-vessels, glands and internal organs, and every tissue of their bodies. Until work of this is done on a large scale, and the fundamental laws of kind therapeutics and toxic action are deducted, our practice must remain to a large degree purely empirical. The public do not seem to be aware that they are neglecting their own interest in neglecting the interest of Medical Science." [4]

Why should not the people join with the medical profession, and demand of this government that an inspector be placed in every medical manufacturing establishment in this country, to see that every preparation put up not only has what it is claimed to have, but that the drugs used are pure and of effectual strength. Our government is maintaining inspectors in other departments of manufacturing of less importance, and is spending annually its millions in constructing handsome death-dealing machines, why not spend a little for a life-preserving plant? The cost of equipping and maintaining a laboratory would be small compared to the cost of equipping and maintaining one of our battleships. While the government is fortifying itself against the enemies from without, why not fortify against the enemies within—disease and death?

Some of the leading men of the profession realizing that thereapeutics is the life of the medical science, and without thereapeutics there could be no science of medicine, assembled at Washington in May, 1900, and organized the "American Therapeutic Society." Perhaps this means more for the future advancement in therapeutics than anything that has transpired for years. In no department of science is the tendency so strong to seek premature results as therapeutics. The medical profession unfortunate has too many who wish to gain notoriety, rush into print with *crudely acquired, and badly digested facts,* and they are accepted with as much deference by many as if they represented the ripest results of the investigation of an expert.

[4] American-Medical Surgical Bulletin, Ed. May, 1898.

One of the saddest comments on the advance of therapeutics of to-day, is that so many of us are ready to give to any substance which comes to us, not only a hearing, but displace some well known and efficient drug with an unknown drug. Although many of the most successsul therapeutical measures of to-day are still empirical, experience must continue to chop out the right-of-way, but science only can build the substantial roadway upon which the successful therapeutics of the future must travel.

The fundamental requirements of a scientific therapeutics are reliable drugs of a definite action; correct diagnoses, and a strict attention to the action of the drugs administered, and then the ultimate success will depend upon an intelligent selection and application of drugs.

Report of the Section on Chemistry and Physiology.

Blood Metabolism.

E. D. DIXON CARROLL, M. D., Raleigh, N. C., Chairman.

It is a comparative simple matter to analyze chemically elements which are taken into the body, and also to be able to say, with some degree of certainty, the chemical form of the various waste products. It is not such a difficult matter to analyze the external secretion from the various glands of the alimentary tract, and to tell what effect each secretion has upon food stuff, at least in the chemical laboratory.

We can, in many cases, say, such and such elements of secretion or excretion comes from the breaking up and reformation of certain other known elements in the body.

We can sometimes say: this element, brought by the blood, during the process of combustion in the tissues, breaks up into thus and so, reforms into this new waste product, which is again carried by the blood to some excretory organ and is there discharged.

The exact metabolic process is often not thoroughly understood, and if the process is known the cause may be obscure. In other words we know more about Chemistry than Physiology, and more about physiological chemistry than about metabolism any where in the body.

But in the study of the blood our knowledge is not only in an embryonic state, but so much remains to be known about its metabolism that we can scarcely claim to have anything definitely proven.

Facts apparently proven by one investigator are disproved by another equally reliable, and the knowledge we have about this subject is in no classified or tangible form.

As the blood is one-eleventh to one-fourteenth of the actual

body weight, and as it is the one essential part of the life of every other organ of the body, a thorough knowlege of the metabolism of the blood itself, may lead to a more complete knowledge of all vital phenomena.

We must, in studying blood matabolism, look upon the blood as an organ, aud proceed to study the various tissues which go to form the complete whole.

One of the first difficulties which confront us in studying blood metabolism per se, is the fact that the various tissues of the blood contain so many elements which are merely being carried to some other organ, there to be oxidized or excreted, and which have absolutely nothing to do with the blood itself, as far as we know.

The blood is the vehicle of communication between all the tissues and we are not able yet to differentiate substances essential to the blood from substances found there enroute to some other portion of the body.

It is impossible for us to say any one element is necessary to the life of the blood which is not essential to any other living tissue. Therefore, in this analysis, I shall endeavor to account for all the elements which go to make up the entire blood. In other words, with any substance found in the blood, I will try to give you what the best authorities know of its mode of production, uses and elimination.

Blood, as seen by the eye, is an opaque, red liquid, alkaline in reaction, with a salty taste. Specific gravity 1055.

Three distinct, and separate structures are found in living blood, plasma, red corpuscles, and white corpuscles.

RED CORPUSCLES.

Red corpuscles average about 5,000,000, in men and 4,500,000 in women per. cu. mm. Increased several millions at birth. Anatomically they are biconcave disks without nuclei.

The minute structure is not known, but supposed to be an almost homogeneous colorless mass of protoplasmic material, the stroma and hæmoglobin. Red corpuscles are cells which have lost their nuclei, and represent a condition of retrogression, also its protoplasm is changed. It is not at all probable that any

given corpuscle lives a great while in the circulation, for the hæmoglobin of the cells is necessarily the substance from which all pigments of the body and excretions come, and as all these are constantly being formed in large quantities, the hæmoglobin must of necessity be used proportionately. Just how long the red corpuscles live is not known; neither do we know where they go to pieces. It was once supposed to take place in the spleen, but that we know does not at least take place the way it was at first represented. The large amæboid cells of the spleen were found to contain red corpuscles in various stages of disintegration. But since the amæboid movement of the cells is known to continue several hours after death, and hence after the red cells are at rest, this is now believed to be purely a post-mortem phenomena. After total extirpation of the spleen, pigment continues to be formed all over the body, just the same. From our limited knowledge at present we are bound to say there is no organ or organs for blood disintegration, but that the process takes place constantly in the blood stream, and that the products are taken to the various organs for the pigment needed.

This constant destruction implies constant reproduction. In adult life the principle organ known for producing red corpuscles is the red marrow of long bone. There is no doubt that red blood corpuscles of adult life are reproduced in bone marrow, but authorities are loath to accept it as the only organ producing them.

Small cells resembling embryonic nucleated blood cells are found in large numbers with the marrow cells in the bone. The erythroplasts are undoubtedly transitional red blood corpuscles, but their origin is still a question. Whether they are the direct descendents of the embryonic cells, or are produced by the large marrow cells, is not definitely known. These erythroblasts, at first colorless, multiply by karyokenesis, and the daughter cells eventually produce hæmoglobin in their protoplasm, thus forming nucleated red corpuscles. The nuclei are subsequently lost, either by disintegration or more probably by extrusion, and the newly formed, non-nucleated red blood corpuscle is forced out into the blood stream, owing to the change in position caused by the growing hæmopoietic tissue.

Hæmetopoiesis is said to take place also in the liver and spleen during embryonic life. The first blood cells in the embryo are found very early, are nucleated and have amæboid movement, and multiply by karyokenesis. Hæmoglobin develops in the cells and they lose their amæboid movement, and eventually lose their nuclei and appear as adult red corpuscles at the time of birth. They have an entirely different origin from the white corpuscles and the consensus of opinion to-day is they never descend from the leucocytes.

However, some of the best authorities still believe such to be the case.

COMPOSITION OF THE RED CORPUSCLES.

Oxyhæmoglobin	94.3	per cent.
Proteid (nuclein?)	5.1	" "
Lecithin	0.4	" "
Cholesterine	0.3	" "

Hæmoglobin is now believed to be chemically held in the stroma and not merely distributed in its meshes, or possibly held in solution by solutions of potassium. Hæmoglebin is one of the complex combined proteids. It unites with oxygen, forming oxyhæmoglobin, and gives up oxygen freely, forming reduced hæmoglobin. It is upon this property the value of hæmoglobin depends as an oxygen carrier in the blood.

Hæmoglobin is capable of decomposition into a proteid, hæmatin or hæmochromogen and an unknown residue. Hæmoglobin contains carbon, hydrogen, nitrogen, sulphur, iron and oxygen and water. The ash is almost pure iron oxide. It is the iron in the molecule which is in the state of loose chemical union with oxygen, and the quantitative determination of iron, will invariably show the value of that special hæmoglobin as an oxygen carrier.

Hæmoglobin is thought to be manufactured from the cell nuclei of the hæmopoietic cell, and Mac Allum finds the chromatin in all nuclei contain iron and it is said to be the mother of hæmoglobin, both in the embryonic and adult cell.

Iron exists in the form of a nucleo-proteid of iron-ferratin, and can be stored up as such, or as hepatin, in the liver to be used for the production of hæmoglobin some future time as

needed. This nucleo-proteid of iron is found as such in cooked meat, cereals and vegetables.

Iron taken by mouth as iron, is formed in the intestine into iron sulphide, thus preventing the ferratin from being used in this way.

Some authorities believe the necessary synthesis of changing ferratin into hæmoglobin takes place in the spleen, some say liver, others believe it is done in the bone marrow. Iron is excreted as a phosphate in the gastric juice, also, excreted in bile, and intestinal juice. Also in urine in the form of an unknown organic compound. The nucleo-proteid of the red corpuscles contain both lecithin and cholesterine, in chemical union; nothing else is definitely known about it.

Sulphur stands always in a definite relation to the iron, two molecules of iron and one of sulphur. Sulphur is probably united chemically with the proteid of the hæmoglobin. One molecule of hæmoglobin holds about a molecule of oxygen, but still is apparently a vacuum for carbon dioxide. Potassium chloride, sulphate and phosphate are the principal inorganic salts. Then we have the salts of sodium calcium and magnesia.

WHITE BLOOD CELLS LEUCOCYTES.

The proportion of white to red cells in the blood is about one white to every three hundred and fifty red. There are four well recognized varieties of leucocytes. It is still a question whether they are different cells with different physiological function or whether they are merely different phases of the development of one variety of cells.

Morphologically they are classified as follows:

1st. Small round mononuclear cells with scanty cytoplasm, the so-called lymphocytes. They comprise 25 per cent. of the number.

2d. Large mononuclear leucocytes with abundant protoplasm about 1 per cent.

3d. Large polynuclear corpuscles—corpuscle either has lobulated nucleus or the lobules have separated and are connected by protoplasmic threads. They comprise 70 per cent.

4th. Eosinophiles—just like the polynuclear except they con-

tain numerous granules in their protoplasm which stain with acid stain. They comprise four per cent.

These all possess the power of amæboid movement except the lymphocytes: and by virtue of this property they wander from the capillary walls out into the tissues all over the body. The functions of white blood cells are not known. Many suggestions have been made as to their probable function:

1st. They protect the body from bacterial invasion, by digesting the bacteria themselves or by producing an antitoxin which destroys their product. This is called "Metschnikoff's phagocytosis theory." They also remove foreign debris.

2d. They aid in the absorption of fats. They are seen passing from the epithelial cells of the intestinal wall to the lacteals with their protoplasm filled with fat granules. They aid in the absorption of peptones.

3d. They take part in the coagulation of blood by the disintegration of their nuclei, thus producing the necessary nucleopreteid for combining with calcium salt to form thrombin.

4th. They help to either produce, or maintain the normal composition of plasma proteids. As the leucocytes are the only typical cells in the blood, it is held by some authorities that they are unicellular glands, the product of their metabolism being the plasma proteids. The formation of granules in the eosinophiles suggest the idea that they are secreting cells. Leucocytes normally undergo disintegration in the blood stream, at least to a large extent. They multiply by karyokenesis in the circulation. Flemming claims, pole-corpuscles and attractive spheres are constituents of leucocytes.

It is equally certain also that some, at least, divide by amitotic division.

The origin of leucocytes as proven by Koelliker and J. Beard is undoubtedly the thymus gland. The reasons are as follows:

1st. Leucocytes clearly rise from the thymus, as there are no others present in the body when this organ first forms such structures. These first or parent leucocytes quickly infiltrate the blood, and other lymphoid tissues rise in all probability from such migrating cells.

2d. No other lymph organ is known which resembles the thymus in the orgin and developmental history.

3d. The thymus alone is sufficient to account for all the leucocytes of the body and it is an organ characteristic of all true vertebrates.

4th. Excepting cases of paired or metameric organs it is not usual to find the same function in any two organs of the body. The thymus is a paired metameric structure of the brachial region only. That the thymus should be the parent source of all leucocytes explains its functional activity in young animals and its later atrophy.

CHEMICAL ANALYSIS OF LEUCOCYTES. (Dried.)

Proteid	1.76 per cent.
Leuco-nuclein	68.78 " "
Histon	8.67 " "
Lecithin	7.51 " "
Fat	4.02 " "
Cholesterine	4.40 " "
Glycogen	.80 " "

Leucocytes probably get their nourishment directly from the plasma, or further metabolism may take place in the lymphatic glands or possibly the spleen.

BLOOD PLATELETS.

They are about one-third the size of red corpuscles, colorless, circular disks, without nuclei, which quickly undergo disintegration.

They are estimated at from 180,000 to 600,000 per cubic mm. Their origin, fate, and function are entirely unknown.

Some authorities believe leucocytes in the process of their disintegration lose first their protoplasm and cell membrane, leaving the nuclei, which persists for a short time in the blood as plates, and then dissolve, going to help form the plasma proteid or as waste material to be eliminated. They contain as near as can be estimated about the same chemical constituents as nuclei of leucocytes. Many believe they furnish the necesssary nucleoproteid for coagulation.

PLASMA.

The liquid portion of blood is a straw-colored fluid specific

gravity of 1027, and is about 48 per cent. of the total quantity of blood. Same reaction and taste as blood. Contains about 90 per cent. of water. Water is absorbed directly from the alimentary canal, especially the stomach, and is found in all tissues to greater or less degree. Is excreted by kidneys, by lungs, by skin and by bowels. Holds all other constituents in solution. Organic constituents comprise about 8 per cent. and are divided into proteid and non-proteid portion.

First we will consider the proteid.

(A.) Serum Albumins, 4.25 per cent. Three distinct ones have been isolated, but no separate physiological function has been pointed out. They are without doubt absorbed from the alimentary canal, not as serum albumins, but as peptones and proteoses. The chemical change from peptones to albumins must, therefore, take place in the cells for absorption in the mucous membrane of the stomach and intestines.

As living animal protoplasm must be nourished by proteid food, and as these serum albumins are in such abundance both in blood and lymph, it is thought they are the chief source of the necessary nitrogenous supply for the tissues all over the body. As all tissues are bathed in lymph (whether transuded or secreted by blood vessel walls) which is formed from plasma, these serum albumins come in direct contact with all living cells. There is, however, no substantial proof that this is correct.

Serum albumin, in nourishing tissues, is probably broken up into a nitogenous and non-nitogenous portion. The non-nitrogenous is either completely oxidized at the time into carbon dioxide and water, or as some believe, is stored up as body fat to be used at some future time. The nitrogenous portion breaks up still farther and reuniting, forms creatin, creatinine, ammonium salts, and other products not so well understood. The sulphur of the proteid molecule goes to form the sulphates of the plasma which are finally excreted by kidneys.

(B.) Paraglobulin, 3.10 per cent. Not a simple globulin, but probably a compound of several.

Like serum albumin, its source is supposed to be the proteid food from the alimentary canal. Other authorities believe it to be a product of disintegration of leucocytes, for serum exuded

from clot contains more paraglobulin than pure plasma. Its uses and destination are entirely unknown.

(C.) Fibrinogen, .22 to .4 per cent. is another complex globulin. Its origin and physiological function is completely unknown, except that when it is acted upon by thombin, fibrin is the result, and upon that fact rests the spontaneous, coagulability of the blood. This, however, in only an occasional phenomena.

It has been suggested that it comes from the disintegration of leucocytes or blood plates, or from the destruction of the extruded nuclei of newly formed red blood cells. But all is conjecture. Fibrinogen can be broken up chemically, and is during coagulation, into fibrinogen proper, and a fibrinoglobulin, and a nucleo-proteid.

Some authorities claim that nucleo-proteid is found free in the blood but most believe it is found only in broken down fibrinogen, as in clot formation, and in disintegrating nuclei.

(D.) Fibrin is an insoluble proteid formed after blood is drawn or when it clots. The latest investigators believe it is formed by the action of thrombin on the fibrinogen molecule, forming fibrin out of part of it and leaving a fibrino-globulin remaining. Thrombin we will discuss later.

Next we have the non-proteid bodies, which are again divided into the nitrogenous and non-nitrogenous.

1. Non-nitrogenous.

(A.) *Carbohydrates.* Of these we have three.

(a.) *Glycogen.* Which is always found in drawn blood, but authorities differ as to its mode of origin; most believe it does not exist free in plasma, but is due to disintegrating cells, as all living cells are known now to possess a glycogenic function.

(b.) *An animal gum.* Found constantly. Source and destination unknown.

(c.) *Dextrose.* Always found in plasma; .12 per cent. In portal vein always marked increase and after a meal rich in carbohydrates. It has been demonstrated to be diminished in blood that has passed through a muscle.

It is absorbed strictly by the blood, by the absorption cells of the alimentary canal, and carried to the liver. Then it is combined probably with proteid, forming glycogen, which is stored

in the liver, and when needed, taken as dextrose in the plasma to the tissues, there to be oxidized, the ultimate products being carbon dioxide and water.

(B.) *Fats.* 2 to 1 per cent., variable; glycerides of fatty acids: palmatin, stearin, olein, sometimes in the form of soap or combined with cholesterine. Claimed to be diminished in venous blood. Source of fats is undoubtedly chyle, and the amount may depend on actual amount of fats taken in the body. Absorbed by lacteals and carried by the lymph to blood. However, sometimes after digestion, fat is less abundant and it is thought to undergo a chemical change during the passage of blood through the lymphatic glands. There is little doubt but that the fats taken into the body are completely oxidized in the tissues to carbon dioxide and water, for the production of heat and energy, and that the body fat is formed from breaking up of the carbohydrate molecule and reformation into the fat molecule. Such investigators, however, as Pettenkofer and Voit believe body fat is produced entirely from the non-nitrogenous portion of the proteid molecule, carbohydrates assisting by protecting the proteid molecule from oxidation, by being themselves oxidized for the production of heat and energy.

(C.) Lipochrome. Coloring matter of plasma.

(D.) Lactic acid, a normal constituent of plasma, especially venous blood. Origin supposed to be from the complex proteid molecule, possibly also from glycogen.

Sarcolactic acid always in the blood and combined with ammonium salts as the lactate of ammonia, which is changed into urea in the liver and excreted by the kidneys as such.

Lactic acid in tissues is said to combine with sodium hydrate driving out carbon dioxide (Vaughan, Harley). Then we have the non-proteid nitrogenous substance.

1. Urea .02 to .05 per cent. as proven by Schroder, is formed largely by the liver. He also proved it was formed from the carbamate and lactate of ammonia, also leucin and tyrosin, or an ammonium compound (and probably creatin). It is therefore the ultimate oxidation product of proteid. It is excreted by the kidneys and as urea, probably serves no purpose.

2. Uric acid, like urea, that is, one of the end products of pro-

teid metabolism with this difference, it is produced as we know by the ketabolism of neuclein. Nuclein given by mouth is excreted as uric acid. Like urea, it is probably formed in the liver, or possibly in the spleen, and all alloxuric bases, as anthin and hypoxanthin, produced in muscle or any cell metabolism, probably have the same origin and destination as uric acid.

3. Creatin and creatinine is largely brought to body by meats eaten, but also found in cell metabolism, especially of muscle and bone. It is excreted by kidney as creatin.

Lecithin and cholesterine are found in plasma in small amount. They are waste products of all nuclei and of medulla of nerve fibers. They are excreted in bile. *Neurine and glycero-phosphoric acid* is found constantly in traces. Origin proteid ketabolism.

Also Jecorin, cause and destination unknown.

Next of the organic constituents of plasma we consider ferments.

1st. A diastatic ferment which converts all corbonydrates into dextrose. Nothing else is known of it, but it is constantly found.

2d. A glycolitic ferment which causes the disappearance of sugar is constantly found, and thought at this time to be formed from the internal secretion of the pancreas. This ferment is believed to act constantly by splitting up the dextrose molecule, ready for oxidation before it reaches the tissues.

3d. Harriot in 1897 discovered a fat splitting ferment also, lipase.

4th. Prothrombin.

Thrombin or fibrin ferment is the chemical union of prothrombin (probably a nucleo-proteid from disintegration of leucocytes and blood plates) and some calcium salt. The inorganic constituents of plasma comprise only about 8 per cent. of the whole. The principal salt is sodium chloride, carbonate of soda ranking next. It is to the latter salt the blood owes its alkalinity, and also its power of carrying carbon dioxide.

Then we have the chloride and sulphate of potassium, phosphate and chloride of calicum, phosphate of soda and magnesium.

All these salts are absorbed from the food taken and are held

in solution by the water in the plasma and their presence enables the plasma to hold the more complex inorganic compound in solution.

Some, especially the sulphates, are products of proteid metabolism. They are excreted by the kidneys.

Gases of plasma:

1st, nitrogen about 2.25 per cent.

2nd, oxygen about .25 per cent.

Both simply held in solution in plasma.

Carbon dioxide, besides, is found combined as the carbonate and bicarbonate of soda. It is chiefly a product of oxidation of the carbohydrates and fats. Besides these so-called known material constituents of plasma, it also contains numerous other substances which have never been isolated, but which must exist in the healthy body. As an example: How does the internal secretion from the various ductless glands, as thyroid, adrenal, pituitary body perform their function except through the blood? Besides, as we know now, numbers of other glands have an internal as well as external secretion. Just what those secretions do we do not know, or what they are, but they are all probably carried by the blood plasma, and not at this time understood.

Dr. Hays.—The paper to which we have listened is upon a subject which is too frequently neglected by the general practitioner. The paper brings our knowledge right up-to-date, in its completeness it leaves nothing to say by way of discussion. It has been heard with profit and pleasure by this body.

Report of the Section on Pediatrics.

Some Points on the Hygiene of Infancy and Childhood.

By SALLIE BORDEN, M. D., Chairman, Goldsboro, N. C.

In my attempt to touch upon the majority of the subjects that demand mention in a paper of this sort, I shall be obliged to pass somewhat abruptly from one subject to another. It is impossible for one to do otherwise in a brief discussion under so comprehensive a title.

I have chosen this subject partly because my experience with the specific diseases of childhood has been too limited to allow of my drawing general conclusions from any one or class of cases, and partly because I have always felt that the field of Hygiene is one that has been neglected if not altogether ignored by the majority of physicians.

I consider "preventive medicine," Hygiene, the most important branch of study taught in medical colleges, and I am glad of an opportunity to say something in its behalf.

I wish especially to call attention to some of the things in which I think that every physician should take time to instruct the parents, particularly the mothers, whom he meets on his rounds. I am in full sympathy with the writer in the Charlotte Medical Journal, of January, 1901, who said, in speaking of the great infant mortality, "Instead of writing a long paper for the medical society, tell all you know to parents." The word "doctor" is derived from the Latin word meaning "to teach;" but how many of us lay any considerable stress upon our function of instructor? I am sure that the term "drug dispenser" would as nearly express the conception which the laity has of the medical man. One occasionally meets with self-satisfied people who assume the attitude of the old woman who said, "You can't teach me anything about raising children. I've buried seven." And Alfred Cotton says in his book on the

Anatomy, Physiology and Hygiene of Infancy and Childhood: "A belief that has taken hold of the lay mind and to some degree, also of the professional mind, is that the maternal instinct endows the mother with a knowledge that is sufficient for all the requirements of the infant, (affection versus science!)." Commenting upon this generally accepted notion that maternal instinct is a safeguard, Mrs. Charlotte Perkins Gilman asks, in her book, "Women and Economics," Can maternal instinct discriminate between Mellin's Food, Nestle's Food, Pestle's and all the other infants' foods that are put upon the market? These are not prepared by instinct, maternal or paternal, but by chemical analysis and physiological study. The record of untrained instinct as a maternal faculty in the human race is to be read on the rows and rows of little graves that crowd the cemeteries."

But this belief in the sufficiency of maternal instinct sometimes hinders the doctor in his work; more frequently all his words, wise or otherwise, sink into the minds of his patients, and if he has once gained the confidence of the latter in his ability, he may accomplish really gratifying results in the cause of sanitation.

Cotton says, "Hygiene in its broadest sense embraces all that pertains to the environment in its relation to the well-being of the individual; and it demands a fairly comprehensive knowledge of many subjects, including anatomy, physiology, biology, chemistry and physics, to which must be added a familiarity with the general principles of heredity, evolution, climatology, dietetics and culinary science. To the objection that no mother may compass these requirements for the proper care of her child, the reply would be the citation of instances in which mothers have done this and more. There is no doubt that the coming ideal mother will eventually rise to these at present ideal requirements. The widely prevalent lack, at present, of such preparations on the part of mothers, only emphasizes the importance of the physician's increasing his information in all that pertains to this subject."

Since derangement of the digestive tract is the most frequent cause of illness among both infants and older children, I will

say something first, along this line. The doctor should explain to the mother something of the physiology of digestion. In the case of a nursing infant, he should tell *why* it is harmful to put the baby to the breast every few minutes to stop it from crying. The digestive juices flow in sufficient amount only at a regular and proper intervals of time; and trouble is sure to follow if this law of nature is overlooked. For the same reason it is important that the child should not be nursed too often. On the other hand, passing over the feeding hour induces overfeeding from an over-destended mammary gland, and this unusual amount taken at an unusual time finds the digestive juices unprepared. During the first six weeks of life, the infant should be put to the breast every two hours during the day, and once at night. From six weeks to three months the intervals between feeding should be increased to two and a half hours. During the latter part of this period the night feeding may be discontinued. Between the third and sixth months the intervals should be increased to three hours, representing seven feedings between 6 a. m. and 11 p. m., inclusive. By the end of the year the infant may be accustomed to five feedings during the twenty-four hours. If sleeping, he should be awakened at the proper time for nursing, until the habit becomes established. The nipples should be cleansed before and after nursing.

There is a difference in the length of time needed by different infants to get the requisite amount of nourishment at each feeding. For example, a vigorous infant may be able to get all that he needs in ten minutes, if the mother's supply of milk is bountiful and flows freely. But if the infant is weak, or if the breasts are not well filled with milk or have an imperfect nipple-formation, the child may require half an hour to satisfy his hunger. It is safe to say that twenty minutes should be given to each nursing. The restlessness of an infant is sometimes an expression of thirst rather than of hunger. It is important to impress upon the mother that water should be given often and freely. A great deal of the "wear and tear" of the nursing period can be avoided if the infant is trained to regular habits of nursing and sleeping. The great gain to the mother is that she is enabled to have undisturbed rest at night. This is of the

utmost importance, and has more to do with a good milk supply than any other single thing in connection with the mother's habits. It is often better to feed the baby from the bottle during the night than to disturb the sleep of the mother.

Nursing mothers should be instructed in regard to the conditions in themselves which favor or hinder normal milk secretion. They should drink plenty of milk, and eat an abundance of simple, nourishing food. According to L. Emmett Holt, sour fruits eaten by the mother are not likely to disturb the infant unless they cause symptoms of indigestion in the mother. The same writer says that the maternal conditions which are most likely to cause colic and indigestion in a nursing infant are extreme nervousness, fright, fatigue, grief or anger; sometimes menstruation. Symptoms in the infant which should make the physician suspect that the child is not being properly nourished are tabulated as follows:

1. Rise of temperature, which in extreme cases may be 105 or 106.

2. Stationary weight.

3. Irregular and disturbed sleep.

4. Fretfulness or crying.

5. Irregular or unhealthy looking stools.

6. The child nurses a long time before he is satisfied. Or he may nurse vigorously for a few minutes, and then drop the nipple in apparent disgust.

7. In the later months the symptoms of incipient rickets may be seen; for example, inability to sit or stand at the proper age, delayed closure of the fontanelle, delayed dentition, frequent perspiration about the head, anemia and other general signs of malnutrition.

In the above class of cases careful examination of the mother's milk should be made to ascertain whether or not the trouble is due to the insufficient quantity or poor quality. Massage of the breast has sometimes seemed to do good in cases of insufficiency in the supply of the milk; and as has been mentioned above, insist upon hygienic mode of living for the mother, as it may bring about excellent results in the baby. But it is not well to

wait long either to secure a suitable wet nurse or to begin artificial feeding.

The subject of the artificial feeding of infants is far too extensive a one to be disposed of briefly; so I will omit it entirely.

I will say only a few words as to the proper diet for older children, since common sense and experience must, in most cases, be the mother's chief guides. Parents should be taught the relative nutritive value of food-stuffs. They should be especially warned against allowing children to eat at irregular hours or to tax their stomachs with sweets, pastries, pickles and other producers of dyspepsia. The use of condiments other than salt and the use of tea and coffee should be discouraged. Thorough mastication should be made a part of the child's training. Milk should hold first rank among the leading staples throughout childhood. A child regularly fed on properly selected food will rarely injure himself by over-eating.

The same care that is to be observed in establishing regular habits of eating and sleeping should be observed also in the matter of attending the evacuating from the bowels. Constipation is a condition in children that is often overlooked by parents and that might be prevented if the child were trained to the habit of emptying the bowels daily, preferably in the morning, just after breakfast.

As to the amount of sleep needed by children at different ages, it may be said that a very young infant should sleep all the time when not being nursed, bathed or dressed. He should be encouraged to sleep as much as he will, being guarded from noise and disturbance. During the second year he should sleep from fourteen to sixteen hours out of the twenty-four. A child of six years needs twelve hours sleep, and one of twelve should have about ten hours. The custom among some parents of letting the children retire with the family, no matter what late hours the later may keep, can not be too strongly condemned.

Another matter that should engage the attention of the physician is the proper mode of dress for the baby, and for the growing boy and girl. Some of the commonest instances of neglect of nature's laws is to be seen along this line. The first requisite, of course, is a sufficiency of clothing to maintain equal bodily

warmth. Mothers often let their children go unsufficiently clothed in cool weather. The little one is sent out with stockings on that reach only half way to the knees; or his arms will be protected on a cool morning or evening, by only the thinnest of muslin sleeves. It is small wonder that catarrhal troubles are so common among children. When babies sicken and die as a result of such negligence as I have mentioned, a scolding would sometimes be more fitting than expressions of sympathy for the parents. Holt says that little children do not, as a rule, require as heavy flannels as do older people; since they spend a good deal of their time in a warm nursery, and their circulation is active. When they go out of doors the addition of coats, and leggings in cold weather makes the thickest flannels unnecessary. The clothing must be loose enough to allow perfect freedom to the limbs; and bands around the waist should be avoided. The ideal night garment for a young child is a sort of bag that envelops loosely the entire body, and is drawn together below by a draw-string. This should be of light woolen material; and if extra protection against cold is needed, a light shirt may be worn under the bag-like garment. For an older child, the combination night garment (shirt, drawers and stockings combined) is best.

Under the subject of children's clothing, I wish to say something in regard to the barborous custom of putting corsets on young girls. Dr. Fitch, of Savannah, Georgia, says in an article on education of young girls: "It is at puberty and freqently earlier that the parents give their consent for the girl to commence the use of the corset, and to use her own ideas as to the degree of constriction. The greatest constriction occurs in the immediate neighborhood of the stomach. When the stomach is distended, as after a hearty meal, constriction produces the "hour-glass stomach" found at times in this class of patients. When the corset is worn, the small intestines are crowded partly out of the abdominal cavity into the pelvis, helping to cause forward displacements of the uterus when the rectum is full, and backward displacement when the rectum is empty and the bladder is full." The compression interferes with the normal action of the abdominal muscles, and with peristalsis; as a result,

the girl or woman becomes the victim of indigestion and constipation. The muscles of the abdomen become flabby, lacking in tone, and so long have those of the back been partly deprived of their function of maintaining the erect posture, that when their steel support is taken away, the patient says that she feels as if her back will "break in two." The normal breathing of women is partly abdominal and partly thoracic; corset-wearing changes the type to chest-breathing. It is quite impossible for a girl or woman to breathe properly or to take necessary exercise in a corset, for even this latter article if it "fits" (according to prescribed notions of fitness) exerts undue pressure on the abdominal organs.

Dr. Fitch also says that absence of menstruation, and painful menstruation with profuse flow are due mainly to faulty development of the uterus and ovaries; and the chief cause of this faulty development he traces to the use of the corset, specially during the period of puberty. He says that he believes that even cancer of the womb is in some cases indirectly due to this improper mode of dress; for the seat of cancer is usually about the mouth of the womb, and it is this part that is irritated by rubbing against the floor of the vagina when the womb is pressed down from above. The custom of wearing heavy skirts suspended from the waist does harm in the same way that corsets do.

The only remedy for the evil is a radical change in the dress of girls and women. An immense improvement would be found in the Grecian dress or some such outer garment as that worn by the women of Japan, the garment made in one piece and hanging from the shoulders.

It has always seemed to me strange that doctors generally have so little to say against the use of the corset. It must be because they are so accustomed to seeing misshapen girls and women that they don't really know what the natural form should be! Doctors are mostly *men*, who have never experienced corsets! Then, too, they are, as a rule, gallant enough to give women the credit for having common sense in vital matters. Most women, when questioned about it, will tell you that they feel quite comfortable in their dresses; just as the Chinese

woman would say that she felt no discomfort from the tiny shoes which they have worn from babyhood; and so it happens that doctors let the matter rest. But it is very gratifying to me to note that many doctors, through the medium of text-books and medical journals, are insisting upon the abolition of the corset.

As to the amount of exercise that children should take, it is hardly necessary to make specifications, for in young people the joy of living expresses itself in rompings and athletics of all sorts, and given plenty of air and playing space, the child may be relied on to acquire the muscular strength and active circulation that go with good health. If properly protected from sun and wind there is no reason why even a very young infant should not spend the whole day out of doors when the weather is mild. The more sickly the child, the more urgent is his need for sunshine and pure air. The nursery should be a large sunny room. It should not be used also as a sleeping apartment. Each child should have a bed to himself, and if necessary for someone else to occupy the same room, special care should be taken to secure one that can be well ventilated without subjecting the child to draughts. The nursery should be simply furnished, preferably with rugs instead of carpets, so that it can be the more easily kept clean. On no account should wet or soiled diapers be left lying about. In fact, nurses must be made to understand that cleanliness, instead of being "next to godliness" is really one of the manifestations of godliness! Care of the first set of teeth should be insisted upon.

Cotton writes: "Of equal importance is care of the fauces, nasal passages and pharynx, especially because of their intimate relation to the respiratory, digestive and auditory systems. The toilet of the mouth, nose and pharynx is even more important than that of the skin, and the infant's toilet outfit is incomplete without a tooth-brush, nasal syringe and an atomizer."

I am afraid of taxing your patience by this disjointed paper, which does not claim to be more than a restatement of generally conceded, if commonly overlooked, facts. But I will ask your permission to say a few words more. In a recent article in the Charlotte Medical Journal the writer lays emphasis upon the

duty of physicians to see that physiologic truths are taught to young people. He mentions, especially, the need of instructing them in regard to the use and the abuse of the sexual function, believing that much of the world's misery could be avoided if only the children were given the instruction that they need along this one line alone. For my part, I believe that it is a sacred duty of all who have children in their care to teach them, as soon as they are able to understand it, everything that they need to know in regard to the physiological laws on whose observance depends their development into strong, pure men and women. Following the advice given in the article just referred to, "let us teach these truths systematically, by lectures and writing, at school and colleges, at patients' homes, and in our offices. It will take time to undo the work of generations, but fortunately the good seed grows, if not as fast as the bad."

In conclusion, I wish to quote, in full, a passage from Alfred Cotton's book on the hygiene of infancy and childhood: "Where the organic elements are so delicate, where their relations are so changing, where so long a time is needed for them to secure their normal and healthy completion of growth, it must be clearly evident that the artificial conditions which constitute their environment must play an important part in deciding the value of their ultimate activity. Such things taken together go to form a child's nutrition, for this term can not rightly be used to designate his food alone. The problem is finally one of nutrition in the broadest sense. Whatever makes for the fullest development of cells is properly included in this term. The child's needs are very different from those of his mature relatives, and disturbances of mind and body occur to him with the greatest readiness and may produce irremediable injury. Hence parents should see to it that the child's environment is designed, in every detail, to further his proper growth. Unfortunately with most people, the main test of whether a child is being properly fed, is that he does not die. The test whether he is properly clothed, is that he does not freeze. The test of whether he is properly taught, is that he sits quietly and passes a sufficient number of examinations. It seems that it would be better in many cases that the child should starve, freeze or remain uninstructed. The medical

man does not do his full duty to the child when he cares for it only in sickness. His broadest duty is to prevent sickness. He must note carefully the hereditary tendencies with which the child is endowed and strengthen it at the weak points; develop it along the lines which may be expected to be deficient, and act generally as the director of the conservation and development of the child."

The Prevention of the Sequelae of Scarlet Fever and Measles.

By EDMUND HARRISON, Greensboro, N. C.

I shall not waste your valuable time in apologizing for my selection of a subject, but beg of you that you give my words a little attention, and I think you will agree with me in seeing that the subject is of far more importance than its title would at first indicate.

It is impossible to draw a distinct line between the complications and the sequelæ of these two diseases, for the former are but forerunners of the latter, and to prevent the former is to render the occurrence of the latter impossible, therefore I shall not attempt any decided distinction.

The medical science is rapidly becoming what it properly should be—preventive—and where within the scope of medicine is prevention so important as in these two diseases, for do they not attack almost all, and usually at an age when almost all of life is ahead?

How often is it that we come across a victim to the sequelæ of these troubles? Here we see one deaf, here one partially blind, there a case of paralysis, and there again a total loss of special senses.

Without an attempt at a regular arrangement, I shall take up some of the more important sequelæ, and perhaps I may be the cause of preventing the sale of a few ear trumpets, eye-glasses, nasal syringes, kidney and consumption cures (?) and even straight-jackets. The ears, eyes, nose, throat, lungs and kidneys are the organs which most frequently have to bear the burdens of these diseases, but the nervous system also has its share, and when it is affected, it is most serious. If we question our learned brethren—the eye, ear, nose and throat specialists—

they will tell us that where these organs have been crippled by scarlet fever or measles, it is next to impossible to make a cure of the trouble.

The eye sequelæ are fortunately not frequent, but occasionally occur in both diseases.

We have an extension of the inflammation to the conjunctiva, setting up a conjunctivitis which is usually mild, but sometimes ophthalmia of severe type sets in, ulceration taking place, and upon cicatrization the cornea is left uneven and with decided opacities, which not only destroy the beauty of the eye but shut out the light and cause an irregular refraction which interferes seriously with vision. I have seen one case in which the opacities were so dense as to entirely destroy vision, the patient being unable to see fingers held in front of the eye. This case followed a severe attack of measles. How can this be avoided?

If every physician will treat the first appearance of conjunctival inflammation, there will never be ulceration. The treatment I have used with perfect success is so simple that I hesitata to give it. Keep the eyes protected from strong light, forbidding all reading or other work likely to produce congestion; keep cold applied (best with a lump of ice in absorbent cotton) as continuously as possible, and twice a day two or three drops of a 1 per cent. sol. of silver nitrate in rose water, is dropped into the eye. This solution should not be used at night.

The ear suffers more serious damage from these two diseases than any other organ. Here scarlet fever is the chief aggressor, but measles too must occasionally plead guilty. As with the eye, here too is an extension of the inflammatory process; from the throat and nose, through the Eustachian tube to the middle ear and thence to the neastoid cells. If we take time to notice it, those cases of scarlet fever with ear complications are the ones in which the pharyngeal symptoms are most marked—scarlatina anginosa. The inflammatory process extending along the small Eustachian tube soon occludes it, but the extension continues, and the middle ear first affected with only a catarrhal inflammation is soon a purulent cavity without drainage. Then the severe earache begins, and unless we are watchful, the mastoid cells become infected, or the drum-head is ruptured, or the lat-

ter may follow the former. Thus is started what may give rise to total destruction of the tympanic membrane, ossicle and mastoid cells, with a permanent impairment if not total loss of hearing.

The treatment to prevent this unfortunate condition is much more trying and unsuccessful than the treatment of eye complications, but should, on this very account, be most assiduous. The preventive treatment is a treatment of the nose and throat symptoms, and should be begun as soon as possible.

The throat should be sprayed with a good astringent antiseptic solution, such as carbolic acid gr. xx, potassium chlorate gr. xl, glycerine f ʒ i, water to f ʒ iv, for the mild cases, and where the secretions are offensive and the ulceration marked, the following will do much to prevent extention: tinct. iron f ʒ p, potas. chlorat. ʒy, glycerine fʒi, water to fʒiv, spray every 3 hours.

Sometimes it becomes necessary to paint the whole affected area with Monsel's Solution, and I do not hesitate to resort to this heroic measure. The nose should be kept as clean as possible with a douche or spray such as Dobell's Solution, using this every four or five hours. Should the inflammation extend into the tubes, notwithstanding our efforts to prevent, then must we watch the membrana tympani, and as soon as we are certain that pus is within, and does not drain back through the tube, the membrane should be punctured at the most prominent point, and the pus driven out by inflation, if that be possible. Usually no other treatment is necessary, but in case the mastoid cells are already involved and an obstinate otitis is present, then should mild irrigation be employed, following with a mild antiseptic powder blown into the cavity.

Little need be said in regard to the nose and throat sequelæ, for while these are frequently met with, the same treatment which applied to the prevention of the ear complications will apply here. As regards mortality, by far the most important sequelæ of both of these diseases, but particularly measles, have their source in the lungs. Here we find that great destroyer of child life, broncho pneumonia; occasionally a true labor pneumonia or a plurisy. It is a rare event for measles to run its course without a bronchitis—in fact you frequently hear a

mother say: "It is only the measles cough," but this mild bronchitis, may at any time extend into the smaller tubes where it plays such havoc, that should the patient be so fortunate as to pull through this attack, the lungs will be left in such a condition that throughout life they seem ready to be reattacked from the slightest exposure, and always a suitable and favorable culture field for the bacillus tuberculosis.

Galloping consumption following measles particularly, but sometimes scarlet fever, is a pitiful wail which all of us must frequently listen to. These mild coughs should receive early treatment, and this treatment must be insisted upon. First should we impress upon our nurses the importance of protecting the little ones from exposure, and too early liberty. Keep them in bed as long as the cough is bad.

I use a simple expectorant as soon as cough is noticed, and my sheet-anchor in the treatment of respiratory troubles of children is ipecac. Paregoric, syrup of ipecac and syrup of tolu in proportions and doses to suit the various ages has done much to prevent serious lung complications. After broncho-pneumonia has asserted itself, then must we treat it as we would elsewhere, and woe betide the physician who does not realize the danger in which his little patient is. Pneumonia and pleurisy are treated as such.

Fortunately the nervous sequelæ are not common, but when the poison of scarlet fever does direct its energies against the nervous system, we may be prepared for anything.

The cases in which the temperature remains high for a long time, nervous twitchngs and convulsions present and sleep a matter of impossibility, will almost always leave us a patient with some permanent nervous taint, such as a crossed eye, a dull ear, a thick tongue, or even a total loss of any or all of the senses of sight, hearing and speech. But most distressing of all is a loss of mind.

The treatment is to reduce temperature by means of cold—especially cold to head, and to control the nervous manifestations with a full allowance of chloral hydrate with or without the bromides. Produce sleep and rest at all hazards.

It is a matter of debate whether or not chronic disease of the

kidneys follows these two diseases. We all know that it is rare that we see a case of scarlet fever in which, at some time during its course, albumen does not appear in the urine, and we also know that our worse cases of acute parenchymatous as well as acute interstitial nephritis are met with in the latter stages of this disease, therefore it is very easy for me to believe that a kidney so affected is very liable to chronic disorder. The treatment is to prevent exposure during desquamation, and if albumen be present stimulate excretion by kidneys, skin and bowels. Here I have found nothing so serviceable as cream of tartar together with warm baths.

The other sequelæ are too rarely met with for me to ask more of your time, but in conclusion I wish to say that as a general practitioner, I beg of you of like calling not to think too lightly of the so much neglected disease—measles—but remember that it has not always done its worst by the time desquamation is over.

I have not attempted to *teach* anyone anything, but only to call attention to what we all know, but the importance of which we too frequently forget. I have avoided all new remedies purposely, for I believe that the old and tried friends are more powerful because we are familiar with their action.

Report of the Section on Anatomy and Surgery.

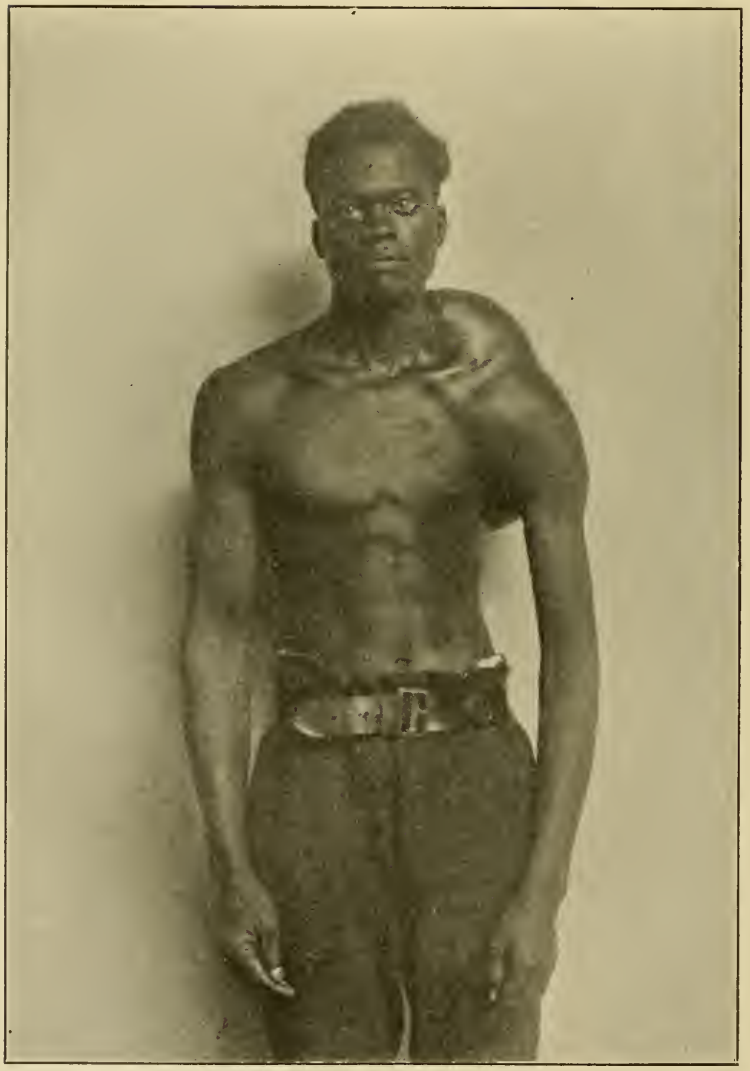
Amputation of the Arm Together with the Clavicle and Scapula for Malignant Growth.

By R. L. PAYNE, M. D., Visiting Surgeon St. Vincent's Hospital, Norfolk, Va.

The brilliant achievements of the abdominal surgeon have so dazzled our senses that for a time the discussion of all other surgical cases have been lacking in interest for the general profession and there is great danger that other and equally important operative procedures may be neglected in our studies.

I desire, therefore, to briefly call your attention to the operation for removal of the upper extremity, including all or part of the clavicle together with the whole of the scapula for malignant growth. There are several recorded cases in which the whole of the scapula, together with the arm, have been torn from the body by accident, resulting in recovery, but it was not till 1808 that the celebrated operation of Ralph Cuming for removal of the clavicle, scapula and arm for gunshot wound was done with resulting recovery of the patient. This was a brilliant operation, but no other case is recorded till in 1836 Dr. Dixi Crosby, an American surgeon, at Plymouth, N. H., repeated the operation with success, and this time the operation was done for a large malignant growth, measuring 37 inches in circumference.

Encouraged, no doubt, by the happy result in this case, Dr. Amos Twichell, of Keene, N. H., two years later repeated the operation with success, and the operation of Mussy, of Hanover, N. H., done in 1837 for the removal of the entire scapula for malignant growth, subsequent to an amputation at the shoulder joint, has been much quoted as an instance of success attending



repeated operations for malignant disease, the patient being alive and free from recurrence thirty years after the operation.

Up to the year 1881, 29 operations had been done for various indications, with a mortality of 38 per cent. During the next six years 28 operations were done, and the influence of antisepsis is at once apparent in the lowered mortality, 18 per cent. In 1887, Paul Berger, of Paris, published a report of his case done in 1882, together with a complete history of all previous operations and laying down definite and valuable rules to be observed in the performance of the operation, and though he advised no procedure which had not been employed by earlier operators his instructions were so explicit as to give a great impetus to this operation, so that since this monograph appeared 125 operations have been done for various indications with a mortality of 10.4 per cent.; certainly a very satisfactory percentage of recoveries when the magnitude of the operation, the hopeless character of the troubles for which it has generally been done and the poor class of subjects demanding the operation is considered.

Separating these statistics, we find that 103 times the scapula, arm and part or all of the clavicle have been removed for malignant growth of either the humerus or scapula with a mortality of only 8 per cent., and my own case reported in this paper reduces the mortality still lower, 7 9-13 per cent.

The indications for this operation are various, but the purpose of this paper is to consider it only with reference to malignant growths. Most the operations that are recorded have been done for sarcoma, springing from the periosteum or medulla in the upper part of the humerus or from the scapula and so involving the surrounding parts as to preclude the removal of the growth without the sacrifice of the arm.

It has been done several times for carcinoma involving the shoulder joint, and Buchanan, of Pittsburg, to whose valuable paper I am indebted for the statistics of this operation, advocates the removal of the scapula and a part or all of the clavicle in all cases of malignant disease requiring amputation at the shoulder.

I fully agree with his conclusions, and would even go further and say that any amputation for malignant disease above the elbow joint had best include the scapula and part of the clavicle,

because an arm amputated above the elbow is of but little service at best, and when we recall how frequently a recurrence occurs in the shoulder or scapula after amputation of the arm for malignant growth, and how much more thoroughly the parts are removed, especially in the axilla and under the clavicle in this amputation, we cannot fail to see such complete operation very much lessens the chances of recurrence.

Take into consideration the low mortality which has attended the removal of the scapula and clavicle with the arm since the adoption of the modern surgical technique, and it seems to me there is nothing to favor the less radical procedure.

The following history of a case which has recently been under my care, sets forth the method of operation:

April 20, 1901—Henry Gatling, colored, æt. 24, of Gates county, N. C., came into my service at St. Vincent's Hospital, suffering with a large tumor of the left shoulder. The growth involved the whole of the left scapula, the top of the shoulder, extending well up on the neck, and the axilla was pressed downward several inches by the mass. The humerus was apparently dislocated downward, the left hand hanging three inches lower than the right.

The acromial end of the clavicle was involved. The greatest circumference of the tumor was 33 inches. On the right side the measurement through the axilla and around the shoulder joint was 17 inches, while on the diseased side the same measurement was 30 inches. The growth had not followed injury and was of two year's duration. The general condition of the man was good, but his health was beginning to suffer and the left arm was practically useless.

Considering the fair general condition of the patient and his absolutely hopeless state without operation, I laid all the facts before him and he elected operation.

After several days devoted to preparation of the part and the system, the following operation was done:

An incision was made over the outer two-thirds of the clavicle through all structures down to the bone. The periosteum was now pushed aside and the middle third of the bone exsected with the chain saw. An attempt was now made to locate the

subclavian vessels, but owing to the nature of the growth all anatomical relations were destroyed, and after losing some time in fruitless search, an incision was carried, from the middle of the one already made, directly downward to the lower axillary border, dividing the pectoral muscles and exposing the axillary vessels, which were now readily bared and followed up to the desired point of ligation. The subclavian vein was now ligated in two places and divided between the ligatures. The subclavian artery was next ligated and divided in the same way. The incision was now carried from the lower axillary border backward across the arm at the lower level of the axilla to the border of the scapula. The incision over the line of the clavicle was next carried over the shoulder and down along the border of the scapula to the lower angle meeting the first incision. A large flap of skin was then dissected up from the scapular surface until the tumor was exposed. Next the omo-hyoid muscle was divided, the tumor separated from the neck and the trapezius, the greater and lesser rhomboid muscles and the serratus magnus were cut in turn. The fingers were run down under the muscles and they were caught on the tumor side with heavy pedicle clamps before being divided. The bleeding was very free but was controlled as far as possible by pressure forceps as the vessels were divided. The pedicle clamps I thought of great service in lessening hemorrhage from the tumor side of the field of operation.

The brachial plexus, which had been uncut to delay the shock attending its division as long as possible, was now divided with a sharp knife and the remaining attachments of the parts severed with a few strokes of the knife. The sternal end of the clavicle was now dissected out. All suspicious tissue was dissected from the ribs, hemorrhage carefully arrested and after several drains were brought through the large posterior flap, the wound was carefully sutured with silk worm gut, a liberal sterile dressing applied and the patient put to bed. The hemorrhage was abundant in spite of the primary ligation of the subclavian, every capillary feeding the large growth being dilated and at one time it was thought necessary to transfuse the patient with normal salt solution, a quart being infused in a vein at the bend of the

elbow, and in 30 minutes a like quantity was administered with the happiest results.

The progress of the case was uneventful, a slight primary wound fever occurring on the second day with a temperature of 101 degrees. This subsided during the night and there was no further rise of temperature. The large wound healed by first intention, and apart from a small slough at one point where the flap was puckered and did not lie down very smoothly, there was nothing worthy of note.

In doing this operation you will note in the main the rules of Berger have been followed, but his operation is designed for typical cases, and in this particular case the large growth had destroyed all anatomical relations and even after the resection of the clavicle it was impossible to locate the subclavian vessels without loss of too much time, but by carrying the incision downwards to the axilla, dividing the pectorals and exposing the axillary vessels the subsequent ligation of the subclavian vessels was rendered very simple. In any future operation of similar nature I should simply cut through the clavicle and at once extend the incision to the axilla and through the pectorals as being the simplest procedure possible and that saving most time.

The microscopic appearance of the tumor mass was largely that of mucoid and colloid degeneration. All of the scapula was destroyed except a small bit of bone at the angle though scattered portions of the mass had a gritty feel to the fingers. The acromian process showed no remaining bone structure, but the cartilage covering the glenoid cavity was perfectly preserved and the capsular ligament was intact. The dislocation of the head of the humerus was due to a large synovial accumulation, the head of the humerus and the cartilage of the glenoid fossa being separated about three inches. The weight of the tumor after separation of the arm and all other tissus was 11½ pounds.

Below I append the report of Dr. Chas. Grandy, the Pathologist to the Hospital:

DR. GRANDY'S REPORT.

From the large tumor of the shoulder four specimens were taken for microscopic examination. These were taken to repre-

sent the various microscopic parts of the mass, which as a whole showed much gelatinous material, and which had forced its way into the muscles and absorbed them. One piece was taken from the neighborhood of the scapula and contained spicules of bone. The other shows gelatinous material held between bands of tissue.

There was no fluid in the mass though the gelatinous material gave distinct fluctuation at places. The piece of tissue taken from near the scapula shows a sarcoma composed of spindle cells with no distinct arrangement. These, however, seem to be tending to change into the spindle variety. In another specimen from nearer the periphery of the tumor the cells are of a different character and show a well marked arrangement into bundles or tubes. The cells here are of the large round variety with large nuclei and are arranged in tubes around a blood vessel, forming its wall. These different masses are distinctly separated from one another. Here the tumor resembles a carcinoma, but can be distinguished by the arrangement of the cells around the vessels (forming the walls of these) and by their tendency to take a spindle shape which is shown in places. There is marked degeneration shown throughout the tumor. This is colloid or mucoid, looking more like one in some places and again more resembling the other. Where the tumor is of the tubular type this degeneration often separates the tubes and then finally involves and destroys them.

The tumor seems to have sprung from the scapula, which it destroyed, and here is of the ordinary spindle cell variety. Later the blood vessels seem to have become involved and to have proliferated, forming an angio-sarcoma.

DISCUSSION.

Dr. Royster.—Dr. Payne's description of an operation is so clear, a wayfaring man though a doctor need not err therein. I do not know that I have ever heard the operation described so clearly as Dr. Payne has done. I have been particularly interested in this subject. There is a distinct field for this operation, and it should be attempted by one able to perform it with as much sense of security as in that for malignant disease of the

breast. The expedient which Dr. Payne used for getting the subclavian artery is a most commendable one. I wish to say that I regard the description of the operation as exceedingly clear.

The Limitations of Surgery in the Treatment of Nervous and Mental Diseases.

By W. B. PRITCHARD, M. D., New York Adjunct Professor Mental and Nervous Diseases New York Polyclinic.

What is the legitimate role of the surgeon in neurology and mental disease? What evidence is there, discarding for the moment the forensic province of undemonstrated theory, that any good thing in positive results has come out of this Nazareth? The subject is far reaching, of radical importance and of entrancing interest. I cannot hope to present it at all exhaustively. It is my purpose to read a practical clinical paper based upon personal observation and experience, and I believe that the accumulated results of more than twelve years in special work permit me the opportunity to fulfil the request with at least some degree of resultant interest. The subject, too, is one which seems appropriate to the occasion, since it unites with a common interest all of us. Differences of opinion are often dependent upon the view point. The surgeon and the neurologist represent the two extremes in medicine—of daring, almost audacity, and conservatism. A military simile suggests itself: the surgeon of today is the outrider, the scout, the advance outpost; the neurologist holds the trenches. To you of the knife there is daring and audacity as duty, to us, for the present at least, that cautious conservatism born of unsolved problems. Understand me to be in no sense or degree underestimating the results obtained along neurological and alienistic lines generally, but only as regards that particular sub-field under consideration. I acknowledge second place to no specialty in medicine in the ratio of general advance during the past two decades. Clothed as he is with the reassuring bullet proof armor of asepsis, the surgeon of today has invaded almost every specialty in medicine and almost every sub-field in the territory of nervous and mental disease.

Within the past few months, I listened to a paper by a surgeon before a New York medical society descriptive of the technique and results in some thirty odd cases of varied major and minor surgical procedures in nervous and mental affections, in about 90 per cent. of which, the writer, with an assurance which was sublime, stated that he had acted upon his own initiative and without any neurological guidance or advice whatever. I might add, with no little professional gratification, that the net results reported, even by the writer, added no laurels to his surgical fame.

Among organic nervous diseases cerebral and spinal tumor, abscess, phlebitis, malformations, congenital and acquired, and all the sequences of trauma, are claimed by the surgeon with an assurance which resents with indignation any protest or criticism and which we relinquish not so much because we confidently expect more, but for the entirely negative reason, that we can, with assurance, promise less.

Personally I believe that at least theoretically we must look to surgery for all that is to be attained in curative results in the disease mentioned. Much remains to be done, however, in the way of prompt and accurate diagnosis and perfection of technique before, even in this field, surgery proves less diappointing than other measures. I have seen and reported one case of brain tumor practically cured, two greatly and for many months relieved, two cases of sinus phlebitis cured, five of cerebral abscess cured and several sequences of trauma cured or favorably modified through surgical interference, which cases otherwise would probably have ended fatally. In certain forms of peripheral neuritis, those due to mechanical causes, surgery is obviously and alone the means to the end of cure. In certain conditions of post paralytic helplessness from contraction, as in the various talipes of poliomyelites the spastic deformities of hemiplegia and paraplegia, muscle transplantation or other plastic procedures often greatly benefit through restoration of useful functions. Many of these cases are greatly benefitted by the mechanical devices of the orthopoedist. I have seen a helpless bed-ridden paraplegic enabled to walk about at will and earn a living by the aid of an ingeniously constructed orthopoedic apparatus. All this we concede to our

brothers with the knife, and still he isn't satisfied, but with rapacious and omnivorous maw, like Oliver Twist, he asks for more.

It is in the sub-field of functional and so-called reflex nervous and mental affections that we dispute the invasion of surgery. Epilepsy, Chorea, Hysteria, the various sensory and motor neuroses and the psychoses, are prominent examples in the contested territory. What has the surgeon done towards bettering the prognosis in epilepsy? I have yet to know personally of a single case cured by operative measures and have notes of 21 cases in which surgical relief has been attempted. Even in well defined focal epilepsy, dependent upon an isolated circumscribed lesion, the results of surgical aid have been grievously disappointing. The habit of having convulsions, which constitutes epilepsy, continues even after the primary cause has been removed. To me the very idea of relief by operative interference in non-reflex epilepsy is radically faulty, if indeed it be not an example of the reductio ad absurdum. We operate to remove a focus of irritation, a lesion. The trauma of operation induces of itself this very condition. The damage from the surgeon's knife equals always and often exceeds as an irritant, the original lesion. The only possible rational excuse for surgical interference in non reflex epilepsy it seems to me must be negative. Since we cannot cure by any other means, no harm and some possible good may come from operation. Even in epilepsy apparently of unmistakable reflex etiology, surgery has proved disappointing. Let me say here that I believe firmly that epilepsy, as well as other neuroses, may have origin in a reflex cause. Two instances occur to me graphically illustrative of such failure. Mrs. G. married, age 35, no children, miscarriage at 28 attended with cervical laceration and followed by cervical stenosis with dysmenorrhoea. For three years previous to observation, each menstrual period had been ushered in with an epileptic seizure at first of the petit and later of the grand mal type. The attacks when I saw her were severe, and several occurred during the five days of menstrual period. The stenosis which was extreme was assumed to be etiologically related to the attacks, which assumption was corroborated apparently by the induction of attacks upon two occasions by

passing a Hanks bougie. Forcible rapid dilatation was done, a skilful gynaecologist operating. The dysmenorrhoea was relieved permanently and for two months the convulsions did not recur. At the next period they returned and have at last accounts continued in equally severe form and at nearer and nearer intervals.

Case 2. D. S., male, age 40. German Hebrew, travelling salesman. Married, two children age 5 and 8, both healthy. Family history negative. Personal history that of perfect good health up to the age of 11, when he was kicked on the middle of anterior right thigh by a horse. Immediate consequences not recalled, but within a few days he had forgotten all about it and there was no local evidence whatever of injury. About six months later, on his way to school, he felt a cramp in right leg, which became first stiff, (rigid), and then began to jerk. The jerking caused him to fall, but did not extend beyond the leg, and he did not lose consciousness. Within a few minutes he felt all right and went on to school, with no after affects whatever.

Following this first seizure he had several similar attacks occurring at night and waking him up, but he did not have a true convulsion with unconsciousness until about four months later. This occurred in school and was of the typical grand mal variety. For four years thereafter he was absolutely free from all attacks. While dancing in an over-heated ball-room and after drinking three or four glasses of beer he fell to the floor in another seizure. In this attack as well as in the first, and in all subsequent attacks, he noticed first pain in the leg at the site of the injury with subjective numbness over the anterior and outer lower leg, followed by jerking of the right leg, a heavy dead feeling in the right arm tingling pain in the right face, then unconsciousness. Following these attacks he is drowsy, confused in mind and the right leg is weak and often drags and at times is powerless. Another attack occurred while skating, the skates being strapped on unusually tight. In 1880 he consulted Berger of Breslau, who advised section of the nerve presumably anterior crural. This was done by Fischer with the result that total paralysis for two weeks occurred. Patient had to use crutches

for two years. During the following ten years the seizures were no less in number, though most of them were of the petit mal type. Coming to this country, he became a patient of Jacobi, who prescribed the tripple bromides, with the result that for seven years patient was free from attacks. When seen by me in '98, he was subject to frequent aura of pain in the thigh, numbness in legs, vertiginous weakness but could usually arrest further developments by getting up and walking and stamping the leg on the floor. Since 1800 he has had attacks as before except when taking the bromides. In both these cases the reflex etiology seems indisputable, and in both it would appear from a prior reasoning that benefit if not cure was to have been expected from the procedures adopted. In both the result was wholly disappointing. I might add from experience, to these two, many others, but I doubt the advantage of so doing, since the result has not varied.

And yet I believe that even here the surgeon has a legitimate field and that if the neurologist be prompt enough in diagnosis and surgeon equally prompt in operating, the benefit would be proportionately greater.

The primary cause of an epilepsy, reflex, organic or toxic, is of less importance in prognosis or treatment in a direct ratio with the duration of the disease. There can be no arbitrary time limit, but in an epilepsy of six or twelve months standing, the cause is relatively immaterial as affecting either prognosis or treatment.

In chorea the equation of value in estimating different remedial measures is somewhat obscured by the fact that the disease is in many instances self limited. We are liable to construe as propter hoc, what in reality has been post hoc only. Not all cases of chorea (and I refer exclusively to non-organic choreas) are self-limited, however, and it should not be forgotten that the most striking characteristic of the disease history is a tendency to recur. Nor should the fact be overlooked that while chorea per se may be a simple thing, it may involve collaterally and indirectly grave and disastrous consequences to the victim. In idiopathic or simple chorea, the treatment is almost statutory in its fixed exactness. In reflex chorea which means all the way

from less than 1 per cent. in the opinions of neurologists to 100 per cent. in the opinions of certain operating oculists, the routine of treatment is less arbitrary. I have records of 76 cases of chorea examined by competent oculists in which defects due to muscular insufficiency and other causes were found and glasses and other opthalmological measures, including tenotomy recommended and not one instance in which a cure could be legitimately claimed for either glasses or tenotomies. I do not mean to say that these measures were not of adjuvant value, on the contrary, I believe that occasionally they served a valuable purpose in removing a secondary cause. In one case of chorea a rhinological friend confidently promised that the removal of a nasal polypus would cure the case. It took six weeks of treatment with Fowlers' solution to remove the after effects of the operation.

In another case, a boy of nine was brought to my clinic with a most violent and intense chorea. He could not stand or talk or use his limbs at all. It was of fulminant onset. I found a redundant prepuce inflamed and bulging with purulent secretion. Dr. Bodine operated for me quite successfully. There was no improvement in a week in the chorea, but within the next four or five weeks under Fowler's solution of arsenic the chorea disappeared. Possibly, and indeed probably, this result would not have been attained independently of the operation which certainly removed an aggravating if not a primary cause.

Most of the sensory neuroses, the neuralgiæ, the tics, the pseudocoxalgias and paresthesiæ are due to blood states or dyscrasiæ—to toxæmiæ quite often. Many of them are varieties of neuritis in different degrees. Painful tic of the face is at times exceedingly intractable, resisting all ordinary and even extraordinary therapeutic resources. In such cases the surgeon is considered and consulted. Section of the nerve or the more radical operation upon the gasserian ganglion is advised.

With regard to the value of either of these operations, I confess to but little personal experience. So vehement has been my opposition on theoretical grounds to either procedure that I can recall but one instance in which in sheer desperation I gave a reluctant consent. The patient, Mr. H., age 61, an army veteran,

developed inflammatory rheumatism while serving in the Federal army. He suffered at the time from facial neuralgia. For twenty years thereafter at occasional intervals the neuralgia returned. In 1891 he had an unusually severe attack, during which the tic or spasm first developed. This attack lasted some two months, and during this time his only relief was from large doses of morphia. In 1892 he had another six weeks' siege. In 1893 two attacks. Section of the superior branch of the 5th was done, with the result that all branches developed a frenzied spasm and pain, except the superior, which was paralysed. He was continually under the influence of morphia for four months, when suddenly all pain and spasm ceased, remaining absent for nearly a year. Following a cold or perhaps the grip, the pain and tic reappeared in the fall of '94. The patient, who had become intensely suicidal, begged for any relief regardless of the risk. Hartley's operation was decided upon. The patient survived. The pain still continues and as a result of the operation certain mental changes subsequently developed which have resulted in a state of practical dementia.

I have within the past year succeeded in relieving two patients with painful tic in most aggravated form, both of whom seriously contemplated upon the advice of attending physicians, radical surgical measures. In both cases complete relief which continues to this day was obtained by means of strychnine given hypodermically in heroic and progressive doses.

Spasmodic torticollis is another disputed field. So frequent have been the disappointments of the surgeon in obtaining beneficial results here as to leave it almost undisputed neurological territory. My personal experience includes three cases, in only one of which did benefit occur.

In this day of materialism affecting all alike, both surgeon and alienist find a kindred impulse in the desire to bring the affections of the mind down to a tangible materialistic basis. Especially is this the trend of alienistic investigation to-day. Much of the slow progress attained in the treatment of the insanities is believed to be due to the persistence of the traditional conception that insanity was from the Gods, and was outside therefore of the sphere of man—medical help. Behind

the jaundice was the cirrhotic liver behind and explaining the dropsy was the nephritis but behind the delusion of the unpardonable sin was what? Until recently we did not know at all. Until recently we did not appreciate the significance of cause and effect in mental disease; that gall stones, for example, might be behind and explain a melas-chole (black bile;) or that toxines and ptomanies might induce disturbance of the psychic cell, or that reflex irritation from periphery might disturb mental equilibrium.

Mrs. A., aged 41, came under my care for a typical melancholia. She had numerous visceral delusions, among others, the belief that her stomach was rotten and that her intestines were full of holes. Obstinate constipation necessitated mechanical relief, with the result that some twenty hard scabylous masses were removed forcibly per rectum, the visceral delusion (?) disappearing almost simultaneously and the patient subsequently making a good recovery.

J. S. Male, aged 48, was seen by me in consultation with Dr. E. Y. Hill, of New York. The patient had melancholia of the stuporous type. He had the delusion of poisoned food and had refused all food for several days. Examination revealed a most horrible condition of the mouth from decayed teeth and neglect of mouth hygiene. A visit to the dentist with aseptic washes resulted in the immediate disappearance of this particular delusion. This patient also I believe made later a good recovery.

Mr. C. Male, aged 37, referred to me by Dr. Dalton, of Winston, N. C., was affected with melancholia, all the cardinal symptoms being present, gloomy and unreasonable depression, intense exaggerated introspection, paralysed objective consciousness, insomnia, post cervical ache, and tendency to suicide, etc. The patient complained of more or less constant tenderness and sometimes pain over the right hypochondriac region. He also gave a history of two attacks accutely severe of what he had been told was bilious colic. Examination revealed suspicious but somewhat indefinite physical signs of an obstructed gall duct. I referred the case to Dr. Tuttle, of New York, who confirmed the local findings. An exploratory operation was done, revealing a gall duct almost completely occluded from stenosis,

the cause, however, not being determinable from local conditions. There were no gall stones and no malignant disease. The melancholia cleared up within a few weeks thereafter, but within six months had returned and though less marked it still persists.

Mr. DeW., age 35, was referred to me by Dr. Barringer, of New York, I found him affected with an hallucinatory insanity of the paronoiac type. Among other hallucinations, all people upon whom he looked turned at once bright red—every one who looked at him did so with design—two people talking on the streets as he passed were talking of him. He could not sleep, the disturbance from voices keeping him awake. He had no sexual power a firm belief, although never in his life had he even attempted sexual intercourse. Other symptoms directed attention to the genitals and examination showed a redundant prepuce with the entire penis studded with cheesy masses. So intense was the irritation that bleeding from the surface could be readily induced. Circumcision was done by Dr. Currier. It is now nearly two months since the operation, rather too soon for final conclusion, but so far there has been no change whatever for the better.

Just one case more and I am done. I had not purposely reserved this case as a dramatic climax. It will nevertheless fittingly subserve that end, Mrs. C., age 29, native of Tennessee, married and a divorce, of robust vigorous physique, a superb type of the feminine human animal. When seen by me she presented all the conditions characteristic of an exaggerated nymphomania. She lay in bed, the nurse and the attending physician as well as the writer being in the room, in an erythristic ecstacy masturbating continuously except when physically restrained. This had been her condition for several weeks. The antecedent history was a follows: She had married a degenerate five years previously, from whom she had obtained a divorce a year or two later. Soon after she developed symptoms of hystero-mania with sexual delusions. A gynecologist in her native city removed the ovaries. She improved but subsequently suffered a relapse, consulted another gynaecologist and lost her uterus. Again she improved but again the original trouble recurred, even worse than before. A third gynaecologist was consulted, who did a

Baker Brown excision of the clitoris; exactly the same result followed, and for the fourth time she was operated upon. This last operation, done by one of the most eminent gynaecologists in New York, consisted in the removal of the cervix left from the former hysterectomy. Six months later I saw her. I did not hear from the patient after consultation, until two years later when upon answering an appointment to commit to a private asylum an insane patient, I found to my surprise my patient of two years before. She was duly committed, again recovered, this time without the knife, and has since married, and thanks to this last therapeutic procedure has remained well ever since.

Briefly summarized my personal observation and experience (I have studiously and with design avoided collaborated statistics and references to literature) leads me to the following conclusions:

In abscess of the brain and sinus phlebitis and in traumatic hemorrhage, surgical procedure is not only legitimate but is imperatively demanded and the only rational hope of cure.

In tumors of the brain and in imbecility due to cranial deformity as in microcephalus, surgery has a legitimate field and while the results attained have not been particularly gratifying, no other remedial measures have resulted in any benefit whatever.

Paralytic deformities, talipses and contractions can be successfully treated by surgical procedure alone. Loss of function may be often completely relieved and useful action restored by muscle transplantation or section.

Compression myelitis from trauma or other cause demands surgical treatment. Laminectomy is a legitimate procedure as demonstrated in the results attained by Dawbarn, Loyd, McBurney and others.

In the treatment of the neuroses intrinsic or reflex, surgery is never a factor of any assured value. It may in exceptional instances prove a valuable adjuvant but should never be relied upon alone with any assurance whatever. In non reflex epilepsy the only possible excuse for surgical interference is that the patient can not be made worse by anything. In reflex epilepsy and in other neuroses due to or aggravated by any ascertained

reflex cause, surgical removal of that cause is legitimate, but that surgeon is wise who promises nothing.

Among sensory and motor neuroses surgery in the majority of instances is a desperate experiment at best and often a crime.

The domain of the surgeon in the treatment of the psychoses I believe to be as yet shrouded in uncertainty. Cautious discriminating experimentation should constitute the guiding and dominant influence. The ratio of failures to success as measured by the records to date is as ten to one, and yet I believe that the future, through added knowledge chiefly neurological, will show a legitimate and an extensive field for the surgeon here.

DISCUSSION.

Dr. I. M. Taylor.—On last Friday night I heard three of my patients discussing the curative merits of three institutions. They had been in three different hospitals. The result is that three of them are under my care, two of them permanently I think. I have formulated in my own mind that it is much easier to carry to the asylums by injudicious surgery than to get them out after they are once there.

Two Interesting Surgical Cases.

I. Extensive Necrosis of Inferior Maxilla; Operation; Recovery. II. Extra Uterine Pregnancy, with Long-Retained, Full-Term, Dead Fœtus; Laparotomy; Death.

By A. W. KNOX, M. D., Raleigh, N. C.

I. *Necrosis of Inferior Maxilla.*—The patient, Robert Martin, a colored barber, about 35 years old, was admitted to the Leonard Medical School Hospital, at Raleigh, on February 24th, 1900—sent to me by Dr. A. M. Moore, colored, of Durham. Family and personal history good; no history of syphilis, nor of phosphorus poisoning.

About 3 or 4 weeks prior to admission, he had a small abscess of the gum, about the right lower, second bicuspid (or second molar) tooth, and went to a dentist, Dr. I. N. Carr, of Durham, *who advised extraction of the tooth.* Patient refused

and Dr. Carr evacuated the abscess, treated it with pyrozone and warned patient of the danger of neglecting it, impressing upon him the necessity of returning for treatment until the abscess should be cured. [I here introduce Dr. Carr's written statement of these facts to forestall any possible misconception of his relations with the case, and to disclaim any unjust implication of *his responsibility* for the man's unfortunate experience of danger and suffering.]

DEAR DR. KNOX: Robert Martin called at my office for the first time about February 1st, 1900. I found him suffering from an abscessed inferior molar tooth on the right side. I advised its extraction, but he was timid, and refused to have the operation performed, so in order to give him relief, I opened into the pulp chamber, and root canals, washing them out with pyrozone, $H_2 O_2$. He expressed himself as greatly relieved, and left my office. I did not see him again for two or three days, when he presented himself again, with jaw badly swollen, and evidence of a large amount of pus present. I again advised extraction, but the tooth and jaw being quite sore, he refused. I then opened through the gum tissue, and evacuated the pus. I never saw him afterwards, until he had been treated by Dr. Moore, (colored), of Durham. Realizing the possible danger of necrosis, I warned him of the mistake he was making in putting off the operation. I write you this because I feel that it is due me, that you should know of my connection with the case.

Very truly yours,

ISAAC N. CARR.

The patient ignored the advice and did not return. The trouble increased rapidly, and when he came to me on February 24th, the whole anterior half of the body of the lower jaw was acutely inflamed, the chin enormously thickened and elongated, so that his face had the aspect of being made up chiefly of *lower jaw and chin*—a picture that would have been ludicrous but for his pitiful suffering. The soft parts under the jaw and upper part of the neck were greatly swollen, œdematous and boggy, with offensive pus dripping from the open ends of two drainage tubes, and the patient was emaciated and very feeble, the personification of wretchedness and misery.

The examination of his urine showed a sp. gr. of 1012, albumen in abundance, and hyaline and granular casts. Heart and lungs normal.

After two weeks of treatment addressed to the renal condition, and the use of tonics and careful feeding, I operated under *chloroform*, on March 9th, 1900. My incision ran along the inferior margin of the lower jaw, from a point opposite the first *left* molar tooth to a corresponding point on the right side, and was located, as much as possible, towards its *inner* aspect, in order to conceal the resultant scar as well as might be. This incision went *to the bone* throughout its entire length, cutting through the periosteum, which was lifted, with the elevator, from both the inner and outer aspects of the bone—two fibrous, hanging curtains, with a triangular interval between them—in the hope of securing, thereby, the formation of new bone in place of the segments to be removed.

I found the entire thickness of the body of the bone honeycombed with pus, and necrosed, from about the anterior molar tooth, on each side, to near the mental foramen. Indeed, so fragile was it, that the *very slight* rocking force, required to pull the first molar tooth on either side—both of which were *very loose—fractured* the bone, at both of the points indicated, entirely through its body.

In extracting the loose, dead fragments with forceps, quite a quantity of bone was removed,—one piece, on the left side, being at least one inch and a half in length (measuring from behind forward) of the entire thickness of the jaw, and showing the tooth-fang-sockets in two places, and the commencing curve of the chin—but honey-combed and eaten out in a remarkable manner.

The whole under surface of the floor of the mouth—from chin to larynx, nearly—was traversed in every direction with sinuses and filled with pus-pouches. These were freely opened up and curetted—the resultant large cavity thoroughly treated with bichloride solution, followed by free irrigation with hot sterile water, and firmly packed with iodoform gauze-strips, and the anterior three-fourths of the horse-shoe-shaped incision closed with deep and superficial sutures of silk-worm gut. The incision

was left *open* for about 1½ inch at each of its posterior extremities, for the exit of gauze-drains on each side of the jaw—these gauze-drains passing clear through, from left to right, in order to secure *good* drainage.

The *chin*-segment of the bone (with six teeth imbedded in it) —though bereft of its main source of nutrition by the destruction of both inferior dental arteries, resulting from necrosis of the *entire thickness* of the jaw *bilaterally*—I left *in situ*, for the present, despite its doubtful future, in order to give some degree of *firmness* to the chin and preserve somewhat of the normal outline and horse-shoe-curve of the two periosteal curtains, in the hope of securing—between them—a regrowth of bone, wherewith to fill the inch-and-a-half gaps on either side of the jaw; and also, in part, to give some firm point of resistance to the bandage-pressure relied upon to control the free blood-ooze afterwards.

The *sutured* portion of the big flaps healed by primary union, and the large cavity left under the floor of the mouth after curetting the sinuses and pus-pockets, contracted down, in the course of a few weeks, to very *small* sinuses—the *left* one healing perfectly at length, but the *right* one retaining a pouting, teat-like granulation-covered orifice, from which I extracted, after several weeks more, two pieces of dead bone, about 3-4 inch long by 1-4 and 1-2 inch wide, respectively. This sinus then quickly healed and closed, and new bone was evidently filling the old gaps on both sides of the jaw.

Then, later on, a pus sinus, leading to dead bone in the chin-piece, opened on the skin-surface of the chin, and also within the mouth under the tongue. I incised the soft parts freely, chiselled into the chin-bone, and thoroughly curetted the cavity in the same—and it healed. The chin-sinus recurred twice more, and the same chiselling and curetting of the bone were twice repeated at intervals of several months.

Meanwhile, the *left* side of the jaw-bone—apparently including the *ramus* also—began to swell and grow tender again, and the whole left side of the face became greatly enlarged and œdematous, with acute suffering, and the old sinus reopened. On June 27th, 1900, I again incised the soft parts on this side, in

the line of the old cicatrix, after assuring myself of the presence of dead bone by means of the probe, cut through the involucrum of new bone, which had formed since the first operation, and removed from its interior a sequestrum about 1¾ inch long by ⅞ inch broad (at its widest point). Into the cavity from which this sequestrum was extracted, the index finger easily passed, for an inch or more, in the direction of the axis of the ramus. I irrigated this cavity freely with bichloride solution (1 to 1,000) and then with sterile normal salt solution, packed with iodoform gauze-strips, and had the satisfaction of witnessing a rapid and perfect closure of the bone-cavity and permanent healing of the soft parts within the next six or eight weeks.

About the middle of December, 1900, the bone of the chin gave trouble again—this time on its under and posterior surface; and again the probe revealed dead bone. Once more I freely incised the soft parts, curetted the, this time, shallow, *superficial*—necrosed surface—and perfect healing followed.

I saw him some time in March, 1900, when he was in Raleigh, and there was then no evidence of disease of the jaw, though his facial aspect was suggestive of a battle-scarred veteran.

At the time of the first operation, in March, 1900, I was greatly tempted to take away the entire anterior four-fifths of the *body* of the lower jaw on both sides, *including* the bone of the chin; but for the reasons stated in the earlier part of this report, I left the chin-bone, with its six teeth, and the result justifies that piece of conservatism. The chin-bone remains intact, and he says that its teeth have a natural feeling, though they were numb and felt like they were dead for some weeks after the first operation. It is interesting to note, that, despite the complete obliteration of the inferior dental artery and nerve —*on each side*—for at least an inch and a half of their length, that the chin-bone and its six teeth still remain, and that the teeth now seem alive and sound. It seems a reasonable explanation, to suppose that this portion of the bone must have had its vitality maintained—albeit at quite a low ebb—by a sort of imbibition of nutriment from the surrounding soft parts and possibly, also, the development of new capillaries distributed on its surface and penetrating the bone itself.

Another compensation to the man for what he has so patiently endured, is to be found in the interesting fact that the great gaps lost by the total destruction and removal of the entire thickness of the jaw-bone, *on both sides*, from molar to mental foramen, have been refilled and perfectly solidified by the growth of solid and healthy new bone. And I am glad to learn from my dentist friend, Dr. D. E. Everitt, of Raleigh, to whom both the patient and I are indebted for much helpful advice and assistance, that, in his opinion, the missing teeth can be supplied by artificial ones. I am fortunate in being able to present the patient for your inspection.

This case illustrates how *great* a trouble may come from neglect of a *seemingly small* matter in the beginning, and also how careful we should be in misjudging the responsibility of another for a bad condition, wholly due to the patient's own neglect of his dentist's advice.

I am glad to be able to say that the man himself admitted to me freely that Dr. Carr warned him of the danger of his course and was in nowise responsible for his condition; that he, himself, dreading the pain of extraction, took his chances and was himself alone to blame.

II. *Extra-Uterine Pregnancy, with long retained, Full-Term Dead Fœtus.*—Clara Jones, colored, 42, married, occupation washerwoman, nine children, oldest 27, youngest 5⅔ years old, all confinements normal, menses normal. Always well till February, 1899, when she was taken suddenly with severe pain *all over* the abdomen, which confined her to bed about two weeks with fever and sweats. She left the bed in two weeks, but about a fortnight later was again stricken with sudden severe pain *all over the abdomen*, which kept her in bed six weeks, with the same symptoms, but more severe than those of the first attack. During this *second* sickness she noticed a swelling of the abdomen, which she thought was due to "the misery inside." She does not remember that she felt any tumor or lump.

Former duration of menses 4½ to 5 days, and not profuse; during the past two years, six to eight days, and *very profuse* but never amounting to menorrhagia. No clots; duration of intervals normal. Appetite and digestion good, bowels regular;

last period began Sunday, February 24th, and ended Friday, March 1st. Nutrition of body good, but not fleshy.

Physical Examination.—An ovoid, symmetrical tumor stands prominently forward, centrally located in lower abdominal region, about the size of the pregnant uterus at seven months, but *projecting more* than such a uterus. Its surface is as smooth as the uterine surface, but the tumor is somewhat flattened from before backward. No nodules nor irregular projections from the surface, but the whole mass feels as hard and resistant as uterine fibroma, suggestive of a myomatous uterus. Through the rather thin abdominal wall the fingers detect a rounded, cylindrical, pencil-shaped hard substance, like the round ligament on the anterior superior uterine surface, running almost horizontally. No fluctuation. Mobility of tumor limited—both antero-posteriorly and laterally—suggesting adhesions.

Vaginal Examination.—Cervix lacerated on right side and patulous, admitting first phalanx of index finger; uterus anteflexed; probe passes 2¾ inches in antero-latero-flexion, a little to the *left*. Tumor felt in right, upper viginal fornix and dipping down into pelvis, conveying to the sense of touch the idea of its being attached by a *short* pedicle to the *right* side of uterus and *adherent* to it, with limited, but perceptible, motion between the two. The uterus seems to have a mobility independent of the tumor, though closely attached to it. No fluctuation nor elastic feel in the tumor *per vaginam*, but it is hard like a fibroid. One small fibroid nodule on anterior lip of cervix.

Rectal Examination.—Tumor flattened, posteriorly; otherwise indications same as developed by *vaginal* touch.

Probable Diagnosis.—Fibroma of the right ovary—*possibly*, ovarian cyst, *tightly filled*, and adherent.

Operation, March 19th, under ether, assisted by Drs. McKee, H. A. Royster and Henry Tucker. Median incision, about 4 inches long, below umbilicus. Tumor apparently solid, with an obscurely-elastic feel at different points here and there, and continuous dense adhesions to abdominal wall everywhere within reach of the fingers. Enlarged incision upwards to a length of about 8 inches, and separated adhesions with the

fingers—upwards, laterally and downwards—sufficiently to expose the tumor's anterior surface.

A long loop of intestine (arranged as an inverted horse-shoe) and its mesentery were spread out over, and densely adherent to, the right and left and antero-superior surfaces of the tumor—*so* densely so, that they could not be dissected off without grave risk of rupturing them. The omentum, also, was tightly adherent in many places, and had to be tied off and cut away at five or six different points.

The adhesions were finally separated by dissecting off, with the end of a grooved director, a large part—practically, nearly the whole—of the outer fibrous coat of the tumor itself, leaving it attached to intestine and omentum, and then paring away the redundant fringe of the fibrous coat and applying catgut ligatures wherever needed. During this dissection, the sac of the tumor was punctured on its right antero-lateral aspect, and a drachm or two of yellow-greenish, orderless pus oozed out. This rent was quickly stopped with a gauze-pad, and the blunt trocar pushed into it, evacuating a small amount—perhaps 5 or 6 ounces—of pus, which then ceased to flow. I then thought I was dealing with a suppurating multilocular *ovarian cyst*, but not so.

The trocar was pushed in various directions within the sac, in the expectation of puncturing other pus-sacs and so reducing the size of the tumor; but the trocar refused to puncture the irregular, hard tissues in the cyst's interior, and so I proceeded with the careful dissection of the outer fibrous coat of the tumor. In the course of this dissection the sac-wall was unavoidably punctured at 3 or 4 other points, whence oozed small streams of the same odorless pus, some of it, in spite of all my efforts contaminating the intestinal surfaces and peritoneal cavity. But each successive puncture was quickly stopped with gauze-pads and clamped, and the dissection proceeded with as rapidly as possible, until the fibrous sheath of tumor was traced down to the tumor's pedicle, at the right uterine cornu, which was tied in two segments with a double-silk ligature, and the tumor cut away and removed. The raw edge of the stump was closed with continuous catgut suture and dropped.

Adherent to the inner posterior aspect of right side of tumor, was a purplish, pencil-shaped sac, about 1½ inch long, probably the remains of the right ovary (as nothing else corresponding to the right ovary was discovered), but resembling more a portion of fallopian tube and containing a grumous, blackish fluid.

The pelvis was well sponged out with dry gauze, the abdominal cavity flushed and cleansed with hot normal salt solution, and the incision closed *without drainage.* The usual normal salt solution enema was given before leaving the table.

On the day after operation patient developed decided tympanites and was much prostrated with a rapid and very feeble pulse, and infusion of normal salt solution beneath each breast (about a quart and a half in all) was resorted to with good results so far as fuller pulse and better strength were concerned. The 5 grains colomel powder dry on tongue at midnight of the day of operation and ʒi doses of epsom salts next morning, repeated every 2 hours till six doses failing to move the bowels, the high enema of glycerine, epsom salts, turpentine and water was given and repeated every 4 hours twice, with the result of freely moving the bowels; and the tympany disappeared, leaving the abdomen flat and soft.

During the first four days the temperature ranged between 98⅘ deg. and 101, and her general condition improved to such a degree as to warrant the hope of recovery; but on the 6th day (March 25th) a chill occurred, with a temperature of 106⅕ per rectum, and a localized peritonitis low down in left hypogastrium developed. Temperature and pulse ranged high for two days more, but on the 8th day after operation (March (27th), the pulse dropped to 120 and the temperature declined to 101, and again there seemed a reasonable hope of recovery for two days; but on the tenth day (March 29th) she became delirious, strength failed rapidly, and she died on March 30th, at 11 p. m., eleven days and a half from the date of operation.

Examination of the tumor, after its removal, showed the presence within the sac of a full grown, dead fœtus, located breech downwards, with the placenta lying on top of its head, and its body in a state of good preservation, yet the bones of the vertex were separated and the brain disorganized and semi-fluid, with

abundant pus oozing from the whole interior of cranial cavity.

One striking feature of this case is, that, although this fœtus came to full term, the mother seems never to have suspected that she was pregnant; though statistics show that the sense of "quickening," as perceived by the mother, is quite commonly absent. Another feature is, the lesson it impresses of the uncertainties of absolute diagnosis in abdominal tumors, *before operation.*

Exhibition of Three Cases.

By H. A. ROYSTER, A.B., M.D., Raleigh, N. C., One of the Visiting Staff, Rex Hospital; Surgeon-in-Charge St. Agnes' Hospital.

1. *Necrosis of the Iliac Bone; Rapid Recovery after Operation.*—W. E. M., farmer, aged 31. Family and previous history negative. About November 2, 1900, a pain began in his right hip, at a spot near the anterior superior spine of the ilium, extending downward to the knee and inner side of the thigh and accompanied by swelling and fever. This pain lasted continually and severely for over two months. On December 1st, it was somewhat relieved by a discharge of pus from a point at the outer side of the iliac spine. He has lost flesh considerably and had not walked or been on his feet for nearly three months and a half when first seen on February 13th, 1901. *Examination* at that time revealed the following condition: Patient weak, thin and anemic; lies in bed with wasted leg drawn up and is uncomfortable only in certain positions; a suppurating sinus is seen about three inches to the outer side of the iliac crest, while another opening presents itself immediately over the anterior superior spine and from this a sinus runs forward along the groin; below on the inner surface of the thigh, five inches from Poupart's ligament, is an abscess in the process of pointing; the whole hip is stiff and very tender on pressure. *Operation*, February 16, 1901, under ether anæsthesia: First, an incision was made over the sinus in the groin, disclosing a superficial tract which was thoroughly scraped; then, the opening at the anterior superior spine was laid bare. This led to a suppurating cavity on the inner, or pelvic side of the ilium and also to a sinus in

the bone itself. Necrotic tissue was found here to the depth of two inches from the crest, at which point the gouge demonstrated a perforation directly through the bone into the cavity just mentioned. All the dead bone was removed with chisel and curette. The abscess on the inner side of the thigh was opened and was found to communicate with the opening above at the spine. A gauze drain was passed through, a distance of twelve inches, and all the other wounds packed with iodoform gauze. The dressings were changed every day at first, then less often, and a ten per cent. emulsian of nosophen in glycerine poured freely into the sinuses before packing. Iron and strychnine in full doses were administered, a free diet allowed and massage employed. Recovery was rapid, the patient being out of bed in a month and beginning to walk on crutches. An April 15, just two months after the first operation, it was necessary to open a suppurating area in the skin over the gluteal region. The patient was discharged in a few days.

2 *Fibroma of the Uterus Complicating Pregnancy; Total Hysterectomy at the third month*; *Recovery.*—A. S., colored, age 28, married seven years; no children, no miscarriages. Her menses began at thirteen years and were always regular, painful and free, but with no flooding spells. About a year ago first noticed that her abdomen was somewhat fuller and since then has been distinctly aware of a growing mass. She menstruated last during the first week of January, 1901, having missed about three months up to the time of her admission to St. Agnes' Hospital on April 6, 1901. She has had no nausea, but has some enlargement of her breasts. The symptoms complained of were a feeling of constant pressure in the abdomen and dyspnea, especially on exertion, increasing in the last month. *Examination:* A large, hard, nodular growth in the abdomen, extending up to the diphragm: the upper portion seems to be movable independently of the lower, and is larger, being much beyond the size of a fetal head: below, there is a mass which entirely fills the pelvis; cervix softer than is usual for a fibromatous uterus and the os is slightly patulous. *Diagnosis:* Fibroid complicating pregnancy. *Operation:* April 17, 1901, Panhysterectomy. Seven inch abdominal incision,

tumor delivered easily, no adhesions. The vessels on the left side were tied first and the upper vagina cut through; then the right side was treated in the same way from below upward. The uterine arteries were secured separately and the peritoneal flaps brought together accurately, so that no raw surface was left in the pelvis. The woman made an uneventful recovery.

The tumor when removed was seen to consist of three distinct portions, a larger mass in the upper part, the uterus proper in the middle and a smaller mass below. On opening the uterus a fetus of approximately three months' growth was discovered. The whole womb was riddled with interstitial fibroids. Weight of specimen, twelve pounds.

3 *Cystic Tumor of the Spleen; Splenectomy; Recovery.*—E. L., colored, age 24. Student. Single. Family history nega-

tive. Has been healthy herself with the exception of chills, due probably to malaria. Last summer she had them for a long period and they continued through the winter. Menses began at the age of 13, they have always been regular, but very free, lasting usually eight days and sometimes accompanied with pain. Her appetite is not always good and she suffers from indigestion

occasionally. She complains of no special pain. In Nov. 1900 she felt an enlargement in her abdomen about the size of a hen's egg; it gradually increased in size until the present time when it seems to be as large as the fist. Examination: Patient not stout, but well nourished and healthy-looking; there is in the abdomen just above the symphysis a central, globular enlargement, smooth in outline, the size of a large orange, with linear mass extending upward to the left in the splenic region; on

bimanual palpitation the growth appeared to move with the uterus and at least seemed adherent to that organ; the cervix was rather soft than otherwise. The diagnosis was considered obscure, opinion inclining to fibroma of the uterus, with the possibility of its being an ovarian cyst. Operation: May 18, 1901, at St. Agnes' Hospital; A three-inch abdominal incision was first made over the most prominent part of the tumor. Seeing that it was cystic, the fingers were swept around the broad ligaments, but one pedicle was found in that region. Pushing the mass upward it disappeared entirely from view and was felt through the abdominal wall in the left hypochondrium. The incision was prolonged until it reached above the umbilicus, when it was discovered that the growth was a cyst of the spleen. After separating the adherent omentum (in which were found two smaller cysts), the vessels were tied with a doubled silk ligature and the whole spleen removed. Not a drop of blood was lost in this manœuver. The right ovary, which contained two or three cysts were also removed. The abdomen was closed without irrigation or drainage. The patient has had, so far, a perfectly normal convalescence.

The Importance of an Early, Definite Diagnosis of Appendicitis.

By J. ERNEST STOKES, M. D., Salisbury, N. C.

Of all the points pertaining to the pathological lesion, now so universally spoken of as acute appendicitis; no one point posesses, not only the more immediate; but too, remote influence towards deciding the final result, than an early accurate, definite diagnosis of this lesion.

It seems that now the great value of detecting the foremost signs and symptoms, the very initial onset of an acute lesion situated in the appendix, is not so often brought to the attention of the physicians, as is the discussion of the propriety of operating in cases of acute appendicitis, the time when to operate, or even the best method of conducting such a procedure.

Nor does one so often hear the general practitioner himself speaking of the tremendous responsibility resting upon him of making out the earliest presence of that surgical condition, which surely must now be acknowledged by all, as most insid-

ious in onset, most disastrous in its progression. How often may one hear of how the medical attendant for a length of time, and alas, too often a fatal length of time, has carefully looked out for signs of pus formation, or waited diligently for the state of being "walled off" to come to pass.

In the way of explanation, it may be stated that the term, physician, is used only in counter distinction to surgeon; because certainly in a very lare majority of cases, the family physician has the first opportunity of making the diagnosis and consequently the greater responsibility of the early, definite diagnosis rests upon him. The responsibility of treatment should be shared both by the physician and by the surgeon, though undoubtedly the greater majority of cases should be treated surgically, and it is not so with the diagnosis?

Does, however, the average physician call in a consulting surgeon as often to decide the diagnosis as he does later to seek the surgeon's aid in combatting those conditions showing progressive characteristics, and that too after the progressiveness many times has changed the condition from a superable to an insuperable undertaking? If this be the case, then does it seem unreasonable to claim for the surgeon every possible atom which may go to him in the success of this undertaking?

Granting that only those cases showing progressive symptoms should fall to the fate of an operation, that is, they should be the cases allotted to the surgeons' care and efforts, does it not seem probable that a greater chance of saving the patient's life, even of this one class of cases will be given, by allowing the surgeon the very earliest opportunity to stem the tide of this progression? Who is the better able to decide the course likely to be developed in these cases, namely: Whether progressing or non-progressing? The physician or the surgeon?

Surely the very little general medicine has to offer for either form can be carried out by the physician or surgeon with probably the same sad results, but not so, naturally, when an operation is the decision. Therefore, surely, in the long run, at least, for the patient's welfare, the greater amount of good would accrue by turning over to the surgeon, not only those cases demonstrating a progressive tendency, but also those of the supposed non-progressive type.

In order that the surgeon, the one who must later assume all the responsibility of those cases which have gone beyond the control of the physician, and which the physician himself so signifies by calling on the surgeon's aid, may have the great advantage of observing every case in its incipiency, and thus decide for himself, not whether the lesion has proceeded far enough to demand an immediate operation, or perhaps too far for any surgical procedure, but rather whether the case will later demand surgical interference at all. For if so, even then at this earliest possible moment the immediate course to be pursued is clear, very clear.

The following case recently referred to me illustrates this point: Mr. A., aged thirty years, white, of regular, exemplary habits, for two months had been feeling languid, with loss of appetite. One Friday night on returning home from a banquet, passed a restless, sleepless night, feeling as though he might have a high fever. There was no pain, nor abdominal discomfort. During the next two days patient felt fairly well. The following day, Monday, patient had no abdominal symptoms nor pain, but felt tired with some nausea, no appetite.

That night violent vomiting occurred, but still no abdominal distress. Tuesday morning patient awakened early with acute pain well localized one-half inch below McBurney's point, doubling patient up and making it impossible for him to straighten out. By Wednesday pain had become excruciating, nausea, muscular rigidity and tenderness to pressure in the ileo-cecal area, were present. Temperature 103 degrees, pulse 120. Bowels moved with salts, and diagnosis of "catarrhal appendicitis" made at once by the medical attendant.

All the acute symptoms rapidly disappeared apparently, and patient by the end of the following week was able to be about his duties. He did not feel quite up to his usual form; but still there was absolutely no abdominal tenderness nor pain, nor did the patient notice a single suggestive symptom. Sunday morning, the 12th day from the initial onset, he passed his hand, for no especial reason, over his abdomen, and noticed a hardness in the ileo-cecal region: but paid no particular attention to it. He moved about that morning, ate his dinner as usual; but shortly

after dinner felt an indefinite discomfort in right side of the abdomen.

He called his physician, who very promptly advised immediate surgical interference. The patient arose and dressed himself and walked without aid to his carriage and was driven to the hospital. That night he came under my observation. On external examination, the muscular rigidity in right side of the abdomen was very marked. Dullness over an indurated mass extending around McBurney's point for about 7cm. The sensitiveness was elicited only by deep pressure, with slight tympanitic note. Facial expression good, pulse 118, temperature 101½. Bowels had freely moved, with two Seidlitz powders. Patient turned himself about in his bed with no discomfort. Locomotion neither difficult nor painful. An immediate operation was consented to by patient.

Upon opening abdomen through inter-muscular incision a mass the size of a lemon filled the right iliac fossa. This mass was made up of a necrotic portion of omentum, the outer one-third of appendix, densely adherent to the outer surface of the lower portion of the ileum. The appendix pointing upward was 11 cm. in length, gangrenous for outer one-third, base normal in appearance, as was also the cecum, which was drawn down below the brim of the pelvis. The omentum, ileum, and portion of appendix, formed the upper and inner wall of an abscess sac. This sac contained about four ounces of a thick, creamy pus. Pus evacuated and appendix excised. The serous coat of ileum was necrotic for 3 cm. The bowel for this distance being of a black gangrenous appearance. The abscess cavity which extended beneath ileum towards medium line was swabbed out, and the iliac fossa drained. At present, now over two weeks since operation, patient is doing well. For the first three days the temperature was 101, pulse exceedingly rapid, distended abdomen, and persistent vomiting. [*Note*: About middle of third week, muscular coat of ileum at the site of the necrotic area gave way, and patient now has five perforations. The sutures in cecum at base of the appendix have held absolutely perfectly.]

Can any one doubt for a moment which course would have been better for this patient? The one allotted to him, or an

early diagnosis, say on the Tuesday morning, or at the latest a definite diagnosis on the following day, Wednesday. Definite in the sense of a full appreciation that the symptoms were progressive in nature and not only warranted, but demanded immediate surgical interference. But how could one so decide, when all possibility of an early diagnosis was lost after the first two days, (Monday and Tuesday) had slipped by? Had the diagnosis been made any time during those two days, it is not very difficult to see how quickly one must have come to the decision that Wednesday's exacerbation of symptoms were markedly progressive over those of the preceding day.

Again was the case amenable to medical treatment. Did it respond? I think not, and it is so proven by the tremendous destruction of tissue found on opening the abdomen. Naturally there was a complete cessation of pain, as the appendix became, as Morris describes it, "dead—nerves and all." So that from that time on, one of nature's most potent and suggestive signals of danger in this disease was silenced. The abatement of fever, due to the lack of absorption into the general circulation of the pathogenic organisms, was also misleading—yet during the entire twelve days this patient's life was in the greatest jeopardy.

Another case coming even more recently under my observation demonstrated most clearly the inestimable value, first of all, of making out an early, prompt diagnosis, and at the same time demonstrating most clearly what irreparable damage would have arisen had the pernicious practice of temporizing been employed in an attack of appendicitis, which only exhibited the acute definite cardinal symptoms later on.

Mr. X., age 26 years, (referred by Dr. John Whitehead), an unusually well developed man physically, and of moderate habits. Had had for the past two months a feeling of languor, and loss of appetite, with obstinate constipation. On one Friday evening while at cards felt an inclination to go to stool. On making an unsuccessful effort, a severe griping pain darted through lower zone of abdomen, from right anterior superior spine to the left one. This lasted some fifteen or twenty minutes, then abated somewhat.

Patient walked to his home some squares distant with no increase of discomfort. After he had retired, there was a return of the desire to go again to stool, with return of the pain in the abdomen. The pain increased so that by morning two large doses of morphia had been required to ease the pain. The pain extended throughout lower zone of abdomen, and not at all confined to the ileo-cecal region. During the next morning the pain continued same in character and position as previously, but accompanied with nausea and vomiting. Still no movement from bowels.

Later in the day the pain become colicky in character with paroxysm of increased severity. The vomitus was of a dark green color, watery in consistency, with no evidence of any undigested food (important.) During this day several hypodermic injections of morphia were required, as the intensity of the pain was distinctly on the increase. Later in the afternoon Saturday, less than 24 hours from the very initial onset, the pain became distinctly localized in McBurney's point, lessened in severity, with the first appearance of tenderness, on gentle pressure; dullness over an area just along McBurney's point. Abdomen became distended with marked muscle rigidity.

Bowels had not yet moved. Patient laid upon his back with knees, especially right one, drawn up. Temperature less than 100 degrees. Pulse a little over 80. The diagnosis of acute appendicitis was made and undoubtedly then was the time for the excision of the appendix, but the patient would not entertain the idea of so sensible a procedure until even over 24 hours later, and only then after he could appreciate for himself that his condition was rapidly growing worse. Sunday morning, thirty-six hours or so later, the bowels were finally moved, only, however, after the most strenuous efforts. The pain localized with exquisite tenderness, distended abdomen, rise of temperature to 103 degrees, quickening pulse of 112, flushed face, with anxious expression, and distinct apathy preceded, in fact ushered in the slow consent of the patient to any surgical interference.

On opening abdomen a black gangrenous appendix wrapped in a necrotic portion of omentum, and buried in between coils

of the ileum was found. It extended over brim of pelvis and laid adherent to anterior surface of sacrum. There was a wide area of localized peritonitis with thick layers of pyogenic membrane between coils of gut, and also on the parietal peritoneum, and lining the iliac fossa.

Appendix was excised and iliac fossa drained. For the first three days the patient was extremely ill, but after that the convalescence was uninterupted.

The keen alertness and ever constant watchfulness of this patient's attending physician saved the day. And did infinitely more towards saving him, than the operation. Appendicitis was suspected on Friday night, confirmed on Saturday afternoon less than 24 hours and an operation insisted upon Sunday noon. Now suppose for the moment the physician had waited until the symptoms were thrust upon him, and such is not an unheard of supposition, namely Sunday afternoon.

Most probably more time would have been lost waiting to see if the symptoms were progressing, and then, as shown by the conditions found at time of operation, all would have been too late. In fact it was perfectly possible to see this patient growing rapidly worse hourly, while the local symptoms were apparently becoming less and less marked.

It is the consensus of opinion of the leading surgeons of the day that to foretell the extent of the diseased condition of the appendix the virulence of its infection, is a colossal undertaking—more, an impossible task. Deaver claims to know but two things about appendicitis, "first, that it is an inflammotion of the appendix. Second that the appendix should come out." Fowler asserts that "every case of colicky pain in the abdomen, suddenly developed with right side tenderness, should be regarded as a case of appendicitis, until the supposition be disproved. The accusation should be made as it were, and the burden of proof should be placed upon the appendix to show innocence."

It is not the scope of this paper to discuss the several divisions of the inflammatory lesions of the appendix, but rather to plead most earnestly for the earliest possible recognition of any pathological lesion of the appendix, whatever it may be. To urge upon all the great importance, and absolute necessity, after rec-

ognition, to watch and follow most closely even the milder-afebrile types.

The physician who willingly takes upon himself the responsibility of not only making out the presence of an inflammatory process, but also the course it is pursuing, accepts a burden which in gravity and uncertainty is incomparable to any possible burden an operative procedure could generate.

Again, I am not unwarranted in asserting that in a vast number of the cases of appendicitis which terminate fatally after surgical interference has been instituted, the diagnosis was either a late one, or woefully wanting in definiteness, even at times absolutely erroneous.

In my own personal experience, out of ten fatal cases which I have seen in consultation, the diagnosis had been erroneously made in four, while in the remaining six the diagnosis had not been made until after the distinct onset of general peritonitis. In every case save one, and in that one the appendix was gangrenous in its entirety, suppurative peritonitis was far advanced, the peritoneal cavity filled with pus. Without a single exception in the nine cases, at least a very suggestive history of the initial symptoms was obtainable, and in several, the symptoms of rupture was clear and distinct. Yet with only one or two exceptions were these cases offered surgical interference, within several hours after perforation, to say nothing of primary onset. Though the fatality of these cases rest now upon the surgical interference exerted, the insuperable task was placed there by the medical attendant, as without a single exception the immediate general condition of the patients apparently warranted the eleventh hour attempt.

In the next series, six in number, all drainage cases, without an exception the diagnosis was a tardy one, indefinite in character. All these cases recovered, after a more or less slow convalescence without any special or serious complication referable to seat of operation, save in the one, in which a fecal fistula developed.

The third series, ten in number, in which an early definite diagnosis was made, without a single exception the convalescence was rapid, and without a serious interruption, save in

one case, in which extensive right sided pneumonia appeared.

Diagnosis of Acute Appendicitis. In the earnest desire of the clinician to avoid overlooking an acute lesion of the appendix, he should ever bear in mind the maxim, that "probability is the rule of life," and in every case of abdominal discomfort without an exception, no matter how mild, nor how far removed from the normal position of the appendix the uneasiness may be situated, he should disprove the responsibility of the appendix, rather than to wait until the symptoms suggest that organ.

The cardinal symptoms of acute appendicitis should be gone over in his own mind, attempting step by step to fit one or all of them to the case in hand, rather than to delay to see if the case will suggest the cardinal symptoms. For in this way the fact of a possibility of an acute lesion within the appendix will never be overlooked, and I know of no better arrangement of the symptoms than those given by Fowler, namely:

1st. Suddenness of the attack.

2d. The occurrence of acute abdominal pain.

3d. Tenderness of the site of the appendix.

4th. The occurrence of nausea and vomiting, either accompanying or following the pain.

But, as Mynter, has clearly put it, "Few diseases, however, present so many stages, each characterized by a different set of symptoms, and yet only in degree differing from the preceding and following stages; every one of the cardinal symptoms may be lacking, or indicate something else. It is their combination and appearance in a distinct order that makes the diagnosis sure." Thus,—the suddenness of the attack may not appeal to the physician nor the patient; save under the closest questioning as in the case already mentioned in this communication. Here the young man looked on the onset as very gradual and suggesting the grip. What he described as at first sudden was not at all the onset; but the distinct exacerbation of an already pre-existing condition. It is not uncommon for the patient to state having had previously a languid feeling or not up to the usual form condition. In four of my cases the patients had been out enjoying some unusual festivities, returning home to be aroused some time during the night with sudden onset of pain differing

in areas of the abdomen in the several cases. Another was seized with pain on a straw ride. One other retired from a game of cards to go to the lavatory, whereupon he was seized with pain. As a rule the history will elicit a slight attack of pain, followed perhaps not for several nights, however, by a very decided increase in severity.

Second Symptom, Acute Pain.—Too much attention cannot be given to the second symptom, namely, acute pain. This cardinal symptom is most variable and misleading of all. Variable in its intensity, only however, as a rule, during the initiatory stage, later its intensity is excruciating, and also it is most variable as regards its location. Acute abdominal pain should suggest an appendicular lesion, the other symptoms singly or in combination passing the final definite sentence. Untold misfortune and manifold regrets must often follow if the physician allows his attention to become distracted from the probability of an appendicular lesion by the lack of severity of the pain and the fact that it is referred to the epigastrium or thereabouts with the occurrence of nausea and vomiting. In fact, the diagnosis of "acute indigestion" or of a "biliousness" so common prior to the present time was made too frequently just from these phenomena. This brings out clearly the fact I have attempted to make prominent, i. e., that this is then the time for medical attendants to be forewarned, and, if he be, he will be forearmed against the next progressive step the process makes, which is generally that the pain becomes centered in the right iliac region, and the patient is in for an attack of acute appendicitis of more or less severity, as the case may be.

It is generally conceded that later the final localizing of the pain, rather indicates the position of the tip of the appendix, and that it may lie in any one of the zones of the abdomen, according to how the appendix happens to be pointing. In most cases, doubtless, this may be true, but, in one case coming under my observation, which proved to be a most violent attack, the pain was never referred to the abdomen until perforation took place, but was an excruciating agony limited absolutely within patient's right testicle.

The severity of the pain may vary from a mere local uneasi-

ness to the most excruciating agony. Generally, however, the initial pain is cramp-like in character for a more or less indefinite period of time. The patient will toss from one side of the bed to the other, gather himself into a lump in the middle of the bed, or hang half in and half out of the bed. Later the colicky nature gives way to a pain which has for its most notable character a constant intensity. But as has been mentioned already the lack of recognition of the fact of the variableness of the character of the pain and its location may lead to grave errors. In fact one of the most suggestive symptoms may be the utter indefiniteness of the pain in every respect.

Third Symptom.—Tenderness over the site of the appendix should always be without the shadow of a variation, the physician's sheet-anchor of the greatest probability of there being an appendicular lesion present, whenever it can be detected in accord with all, or even any one of the other cardinal symptoms. Should the point of greatest tenderness be well localized, but still not be confined to the usual site of the appendix, or not only in a strange place, but standing out alone as regards the other symptoms, even then must one most carefully and cautiously exclude the probability of an inflammatory lesion of the apdendix, ere he has done ought to remove his patient from the brink of probable calamity and likely destruction. This tenderness is a most constant and valuable sign and may be looked upon as almost pathognomonic of appendicitis. The sensitiveness as Fowler says: "Will be slight or well marked, according to the stage of the disease and severity of the attack. This is the feature of the disease which forms the best diagnostic guide and indicates more than all the other symptoms combined the progressive characters of the attack." With an increase of tenderness one should bear in mind:

1st. Pus information.
2d. Progressive ulceration.
3d. Gangrene of the appendix.
4th. Perforation.

While of decrease, on the other hand, may be too an augury of very grave import, implying that the effect of the suppurative process has been sufficient to paralyze the peripheral nerve filaments.

The Fourth Symptom. Nausea and vomiting is highly important in conjunction with any one of the other cardinal symptoms, especially if it accompanies or follows the pain; but undoubtedly both nausea and vomiting occur more frequently than any of the other symptoms, while no involvement of the appendix is present. The character of the vomitus should be carefully considered and thoroughly examined. The presence of a dark green colored vomitus, of a watery consistence is more significant, coming on a number of hours after the ingestion of food or some nourishment, than is the expulsion of undigested food shortly after a meal, or immediately following the taking of some medicine or other.

(a) The temperature, (b) pulse rate, (c) facial expression, (d) abdominal distension, (e) the dorsal decubitus, and the degree of limitation of movement on the part of the abdominal muscles, especially upon the right side during the respiratory movements, should all be most carefully observed and profoundly regarded. Still it must be borne in mind that this latter group of symptoms rather aid in determining the progressiveness of the attack, and should not be awaited for in making out an early diagnosis.

The significance of muscle rigidity, the presence of dulness on palpation over a circumscribed area, the proper mode of palpation, and the respective values of rectal and vaginal examinations belong so distinctly to the more advanced stages of the disease that they will not be discussed here.

One point, however, worthy of note must be mentioned here, as it sometimes occurs in the earliest phase of the disease, namely, the intermittent rigidity of the right rectus muscle during the first two efforts at palpation, in an examination. The muscle will become rigid on the first examination. After remaining rigid a moment the rigidity "shies off," so to speak, from under the finger tips. Now, if after a moment or two rest, provided the first examination was made gently, and without much discomfort to the patient, if a second attempt be made the rigidity will be found not only much less marked, but many times entirely absent.

Regarding the leucocyte-count, though it has its limitations

as regards the diagnosis of an appendicular lesion, still it is at times of an inestimable value, as an aid towards determining the progressive character of the inflammatory process, and should, therefore, be invariably made at least several times whenever possible. The following items should be borne in mind:

1st. In an apparently severe case a low count is a very bad prognostic sign.

2d. A steadily increasing leucocytosis, should always suggest an inflammatory process of a progressive character.

3d. There may be a large abscess and still there be no leucocytosis, or at most a very low count. This is generally with a so-called "walled off" abscess.

4th. A very marked and sudden change in the count, either increase or diminution, should always suggest rupture of an abscess sac.

5th. In the catarrhal form often the count may be very slightly increased, or even absolutely normal.

The Differential Diagnosis of Acute Appendicitis.—It is not possible here to go into details concerning the differential diagnosis of acute appendicitis. All that space permits me to do is to call attention to the various forms of the affections likely to be confounded with an appendicular lesion, and then for the practitioner to compare the cardinal symptoms of appendicitis, with the symptoms and clinical course of the probable affection. The great difficulty lies not so much in the differentiation of one lesion from another; but in the utter failure of recognizing the insidiousness of every lesion of the appendix.

In the majority of fatal cases the error will be generally in the total want of a definite decision, rather than in a wrong diagnosis. In those cases of erroneously made diagnosis, it is generally found on operating that the suspected appendicular lesion turned out to be a lesion of another organ, rather than the reverse condition. This is important as going to show that an appendicular lesion has a distinct clinical aspect and a clear train of symptoms, which are in the large majority of cases definite, constant.

The following affections have one, or more symptoms in common with appendicitis, and should therefore be borne in mind.

1st. Acute intestinal obstructions.
2nd. Typhoid fever.
3rd. Affections of the gall bladder.
4th. Movable kidney.
5th. Ureteritis.
6th. Abscess in lumbar region.
7th. Ectopic pregnancy, especially at time of rupture.
8th. Pelvic inflammatory disease.
9th. Dysmenorrhic pains.
10th. Coxitis.

One word regarding the administration of opium, and the application of the ice bag. The greatest care should be exercised by the practitioner in the use of either, on being called to see a patient exhibiting decided abdominal distress. As the pain, tenderness, and even the muscular rigidity may be so masked or delayed, as to prevent entirely a true conception not only of their presence; but even progressiveness of the symptoms of the attack.

Finally, the inestimable value of the earliest definite diagnosis of appendicitis can only be fully appreciated by those, who realize and willingly acknowledge to themselves and to the laity the untold necessity of an immediate surgical interference in the vast majority of cases.

To the man who feels confident in his ability to determine the exact pathological condition existing within the appendix,—namely, whether catarrhal or interstitial. Whether ulcerative or not the early diagnosis will appear of lesser import, than to the man, who ever appreciates his profound inability in many cases, not only to diagnose the nature and extent of the histologic involvement; but even to recognize whether the inflammatory process is progressing or not.

DISCUSSION.

Dr. Hubert A. Royster.—I am one of those who believe in every case of appendicitis the surgeon should be called in as soon as a diagnosis is made or there is suspicion of appendicitis. The interest of the patient demands it, justice to the surgeon demands it. It is not fair to ask the surgeon to come in after the physician has had the patient in charge a number of days.

Give him the benefit of the doubt in the case, do not wait to force the operation on him with a death on his hands when the whole thing is due to the fact that the surgeon was not called earlier. Operations done too late are a bugbear to surgery; operations done too early are so rare that one seldom hears of such a thing. I believe also that there is not a single symptom of appendicitis to be absolutely depended upon. Dr. Stokes has carefully gone over the symptoms and has to my mind expressed the consensus of opinion among physicians and surgeons. We should not wait for the consensus of evidence. Given any one of these the probability of it must be taken for granted. Pain is sometimes a constant symptom, distention, tenderness. None of the symptoms can be depended on. What can be depended on is the experience of a surgeon who has had a chance to diagnose the cases repeatedly and open the abdomen afterwards and verify his diagnosis. There is no question about the fact that appendicitis is a surgical disease, inflammation of a closed tube going on in the majority of cases to pus formation. In the first place the organ should be removed before pus is formed; if not, certainly after pus is formed. I have performed this operation for appendicitis six times in the last 30 days. One of these had the diagnosis of malaria made until he recognized the pus; the second was one in which the diagnosis of typhoid fever had been made, until the abscess was recognized. The more I see of appendicitis before and after operation the more rapidly conservative I become in the saying that every case of appendicitis should be operated on as soon as diagnosis is made. Dr. Murphy, of Chicago, has shown that no one has ever heard of a case where any one has died within 24 hours, if operated on within that time; and only few have died within the first 48 hours. He has shown that during the first 24 hours the disease is limited to the appendix in the majority of cases; after that by rupture, gangrene or whatever follows the disease becomes one which is not limited to the appendix, but is transferred to the surrounding structures. I believe more lives will be saved by operation on every case though they may not all be appendicitis.

Dr. McAnally.—The surgeons tell us there is no rule by which

you can diagnose appendicitis, none whatever until it is diagnosed. Who diagnoses it? They say the physician does and when he does it is diagnosed too late. They say in 95 per cent. of cases the pain is about the umbilicus. That is a case of colic. Is the surgeon going to call that appendicitis and operate for a case of colic? I have had some cases of appendicitis and had them operated on and the patient did not die. Will the surgeons tell us the difference and help us to diagnose the case in time? I believe in operation for appendicitis but not for colic.

Dr. Geo. W. Long.—In the country we are sometimes called to see cases needing operation who are too poor to secure the services of an expert surgeon. Two or three years since I was called to operate for appendicitis. The usual opening was made in the belly and a large quantity of pus evacuated. Search was made for the appendix but it was not found. A counter opening was made in the side posteriorly for drainage purposes. One month thereafter I was recalled; the posterior wound was closed; the anterior one was discharging an offensive fluid. We were led to believe the existence of intestinal perforation. A much more extensive opening was made, the appendix found and removed. It was perfectly normal. A longitudinal section revealed two small enteroliths—size of hemp seed. We found perforation of ascending colon large enough to pass the hand—edges necrotic. With the scissors the ragged edges were trimmed and then closed with Lembert's method. In this case we used silkworm gut and a common cambric needle, the wound was packed with iodoform gauze, the bowels bound for a week and the recovery was entirely satisfactory. This case has been reported in The Charlotte Medical Journal and the Transactions of the Tri-State Medical Society more in detail. I first thought the operation was for appendicitis, but I do not know whether it was or not.

Dr. Robt. T. Morris, an eminent surgeon of New York, wrote me he had had two such cases. I only mention these facts, so far as they are facts, in order to furnish discussion, and as the case is somewhat unusual I hope I may be pardoned for referring to a case which has already been more fully reported. The next three cases diagnosed as appendicitis.

Cases operated upon in the usual way; pus liberated; the

appendices not found; packed with gauze; two satisfactory recoveries, and one too recent to say what the result will be. I can conceive of cases where the general practitioner in the country can do much toward the conservation of human life by using his common sense.

Dr. Meriwether.—I am one of the few who believe in operating in every case of appendicitis. In regard to diagnosis, the gentleman spoke about colic being operated on; I believe that 95 per cent. of the cases of right side colic are appendicular.

Dr. Kent: I agree with Dr. Long that we cannot have the help of a surgeon in every one of these cases. They are too poor to go to hospitals, and their poverty prevents the county physician from calling in a surgeon. We must make the diagnosis for ourselves and if an operation is done, we must play the part of surgeon whether we wish it or not. A few days ago I operated upon a case for a young professional brother. He had made an early diagnosis of appendicitis, and his ability to make a correct diagnosis is up to the average of young physicians, if not a little above the average. The history and symptoms as described to me were as near up to the classical description as you will often find. These cases are often difficult to diagnose, and I was not clear as to exactly the nature of the trouble, but was satisfied beyond question that it was a case for operation. There was slight tenderness on the left side as well as on the right. I suspected probably I might find the trouble on the left side, and in order to reach that side also, I made a median incision. I found the caecum and appendix normal and healthy. Upon bringing up the intestines on the left side I found the descending colon from the splenic to the sigmoid flexure completely gangrenous. You can all understand and appreciate my embarrassment upon finding that condition of affairs. The man, to be sure, died the next day. In this case an early diagnosis was made and the operation done on the sixth day. The appendix was not the cause of the trouble. A little more than a week before that a case occurred in my own practice with the usual symptoms on the right side. There was the usual tenderness and board-like hardening of the muscles on the right side. I waited until unquestioned tumefaction had developed when I

was satisfied that there was a pus cavity. It was two weeks from the beginning of his case when I operated, and today he is a well man. There is always a question in my mind as to whether I should operate in the beginning of a case or treat medically. A large majority of these cases will recover under medical treatment; some of them will not. Being of a conservative nature, I confess that I treat the majority of the cases medically and with a very few exceptions they have recovered without surgical interference. That leads us to believe that these symptoms can be produced without a condition existing that will necessarily lead to ulceration or slough. I believe the majority of those cases are catarrhal in nature, often due to trouble with the caecum and not the appendix, and if treated medically they will recover. Some of them I know will not recover. But when you consider the chances for or against your patient in a remote country district, I believe it is best for the county practitioner to use medical treatment until he is forced to operate.

Dr. Herring: Unfortunately there is a great many country fellows who think they are surgeons and go to cutting and slashing—want a great reputation as surgeons and they will find a great many cases of appendicitis.

Dr. Weaver: I wish to relate one little experience under this phase of the subject. I was called to see a young lawyer in our town. He had all the classical symptoms of appendicitis, pain in the right iliac region, vomiting, constipation, moderate rise of temperature. I suggested to him appendicitis and an operation. He refused. I gave epsom salts, hot application and turpentine stupes. After six days the man made a recovery. He went on six months probably, and was taken with a similar attack, more severe than the other. The same symptoms reappeared. I called in one of the surgeons and he confirmed the diagnosis; he then made another recovery. He went on six months or a year. Unfortunately he was riding a bicycle and tumbled in one of our rough avenues. He was removed to the hospital. We diagnosed the case as fracture of the base of the skull. It went on a week or ten days and the man died. A post-mortem was done and the appendix was found almost perfect, no serious patho-

logical lesions. I would have operated on that man for appendicitis.

Dr. Stokes; The idea in reading the paper was simply to show the necessity of reaching a clear understanding as regards the lesions of the appendix. As regards treatment, that is entirely another thing, and would require a great deal of care and study and a paper should not be written without the greatest amount of experience. What I wanted to show is that the average physician does not make a diagnosis of appendicitis until after another lesion has been formed. The mortality under medical treatment is accepted as being about 25 per cent.; with these men who have reported cases here who do the operation even because they have to, the mortality is about 6 per cent. When a man tells you he has cured appendicitis, he would probably not recognize it the next day. As to the cause of colic, that is an indefinite remark. People do have pains in the stomach but the pain may be explained on account of the nerve supply of the appendix, which is from the superior mesenteric plexus of the sympathetic nervous system, and filaments are known to run to the small intestines. Undoubtedly cases of appendicitis take their origin from a catarrhal condition of the mucous membrane of the appendix, but as for showing that they always start in the cecum, that is not borne out. The first thing is for the physician to decide if he has the power to diagnose appendicitis, and if he has not, to put himself in position to do so. As regards Dr. Long's remarks, undoubtedly many a good surgeon has never been developed for lack of opportunity and many a man would be a great surgeon had he had a chance to develop. No one knows what the condition of the appendices were in his cases. The surgeon takes out the appendices and an examination is made of the cases, therefore it is only through the surgeon that you are going to get any sort of statistics in regard to appendicitis. In a majority of cases where the operation is done for appendicitis and the appendix is left in, trouble in the most serious form ensues. As regards Dr. Weaver's remark of the appendix being normal, there was no microscopic examination made. You must be able to know the histological examination of these appendices after they are removed before you are going

to be able to tell anything about them. The thing for every practitioner to do is to familiarize himself with the symptoms. The cases ought to be watched and studied by the man who is going to do the operation. If the practitioner is going to operate let him make the diagnosis and operate; if the surgeon is going to operate, then do let him have a chance to take all the responsibility.

An Unusual Case of Gall Stone.

By T. P. WYNN, M. D., Tarboro, N. C.

Mrs. F., age 48, married. On the night of December 8th was first called. Found patient suffering with slight nausea, some pain, tongue coated, no fever.

Upon inquiry found that for more than a year past patient had been suffering with similar attacks, each after an interval of a few weeks, sometimes months, being more severe than the preceding. To this time patient had called no physician, thinking, as she described it, her trouble was only one of temporary disorder of the alimentary tract, or simply indigestion. For these troubles she had always treated herself; every conceivable brand of pills being used that the market afforded. Further inquiry showed that the pill habit had become so fixed that in her language, "she could not do without them," protesting that by taking these her indigestion was relieved, and constipated condition of bowels, which was each week becoming a symptom of grave suggestion, was overcome.

Her history of the long and constant use of pills was peculiarly interesting. Obtaining as complete history of the case as I thought necessary, and seeing after further examination nothing specially suggestive.

Prescribed (R) calomel, gr., xii, ft. charts. No. vi. Sig. One every 4 hours. Directing diet of soup, or milk, I left to return on the following day.

Returning on the evening of the second day, found that patient had been resting well, nausea gone, pain eased off, no fever; patient apparently better. Calomel had not operated. Accordingly, Seidlitz powders, dose every 4 hours until the alimentary

tract was relieved, were ordered, directing an enema of warm water to be used later in the day if at all needed.

The nurse satisfied me that my instructions would be carried out, I left to return on next morning, the third day of my patient's sickness.

Returning as by promise, found that previous instructions had been carried out and that no impression whatever had been made towards relieving the bowels—calomel, Seidletz powders, repeated enemas, all doomed to the same failure. Feeling less assured than at any time before, as to a short and easy termination of my patient's sickness with rapid return to convalescence, I again attempted a most thorough examination, with results as before; nothing of especial diagnostic significance beyond what had been noted before, except distension and very slight tenderness in right hypochondriac region; neither to any marked degree. Patient, however, was having at times more pain than at any period of present sickness, getting more restless, besides occasionally the light soups, or milk, or peptonoids were being rejected by the stomach. Made patient as comfortable as possible, giving just enough morphia to keep the pain relieved. Using enemas, and small doses of epsom salts, ordered hourly, I left to return next day.

On fourth day found patient in no way relieved except from pain while taking morphia; and from this time through the entire progress of the case morphia was the drug upon which we had chiefly to rely—this was given hypodermically. For the first time a jaundiced condition of patient is rapidly developing. Percussion and palpation reveal that the hepatic area of dullness extends through epigastric well into left hypochondriac region. The right hypochondriac being perceptibly enlarged, with increasing tenderness throughout the entire region of liver and gall-bladder. Pain increasing relatively each day in same region as case further progressed. Of course, morphia repeatedly and at times energetically had to be given. I ordered after the appearance of the jaundice, for the colicky pains had been present for past three days, olive oil in one to six oz. doses, as stomach would take it, every 4 hours. In the mean time the enemas had not been neglected. To these Seidlitz powders, and

at times glycerine had been also added, the same passed by a long tube as far up as practical through sigmoid flexure into the colon. Massage from time to time was attempted. Results no better than before. Ordered frequent inunctions of olive oil over affected region; not from any special faith in its therapy, but that friction in the administration of same might be more faithfully applied by the nurse in absence of the physician. Left to return on evening of same day.

Returned. Found patient resting only when under the influence of morphia. Only a small amount of nourishment was being retained—enough only to barely sustain life, with the stimulation previously ordered, continued treatment as before directed, to return on the morning of the fifth day.

On this visit found condition of patient practically unchanged, without in any way having made least impression towards relieving the alimentary tract. With a similar history and unchanged results the several successive days were passed even to the 16th day of patient's confinement. At this time, on account of gradually declining strength and general weakness, nitrate of strychnin, gr. 1-40, and whiskey every 4 hours, had to be faithfully administration. This course of stimulation was kept up throughout further progress of the case.

Tenderness, with enlargement throughout the epigastric and hypochondriac regions had become daily more progressive. A small amount only of the milk and peptonoids was being retained. Nausea at times was almost uncontrolable, patient's condition at this stage was extremely critical, with little encouragement in the hope of immediate or future relief, pain, nausea, weakness, restlessness calling for continued and most unremitting attention.

With little change of condition, except for the worse, patient had been held up until the 18th day. On the morning of this day patient's bowels moved for first time, and repeatedly until mild medication to limit peristalsis was resorted to. There was no fever during entire sickness—no inflammatory process at or about seat of obstruction.

The gall-sack during entire period had been cut off in its connection with the duodenum by an impacted accumulation of gall-stones.

The tensely distended gall-bladder, with an exceedingly engorged condition of the liver, together with the exaggerated weight of both, with functions physiologically suspended, had been for the entire period pressing directly and most powerfully upon the hepatic flexure of ascending colon, mechanically obscuring the lumen of the intestine, until the 18th day, when the stones were dislodged, passing into duodenum, thereby permitting the gall-bladder and liver to return to their normal functions.

Patient goes on to a rapid and uneventful recovery.

Before so late a day surgical relief would have been called, but objection from family and relatives forced us to do the best possible without operation, until nature and good luck helped us through.

The Pronated Foot.

By MICHAEL HOKE, M. D., Atlanta, Ga.

From a mechanical point of view, the foot is the most splendid anatomical structure in the human body, in spite of the fact that the dress customs of civilization have shown little regard for its needs, if its strength is to be considered a desirable thing. The relation of its bones, its ligamentous braces, its muscular suspension, together make up a series of flexible, elastic arches, which, for precision of design, can find no counterpart in nature.

Its function is to support the body weight, and as a lever, to make locomotion a movement of poise, activity and grace, free from all pain.

Its attitudes, its ranges of motion controlled by and balanced by its muscles of the leg, the fashion of the covering, the manner of its use, are all factors in the preservation of its integrity, as an efficient and lastingly useful piece of mechanism.

Its component parts must be in a normal condition, the muscular power must be sufficient, and it must be properly used if it is to be serviceable.

If any of these conditions are lacking, the foot is no longer effective as a lever, its spring is lost, the muscles which control its balance act in a faulty manner, no longer distribute the body so that the foot as a unit bears it; the attitude of passive sup-

port is assumed, it yields, the foot is weakened; pain, awkwardness and disability follow.

The types of non-deformed but structurally weakened feet are many, indeed each foot has its own structural individuality; thus nearly all cases falling under a type of defect, present individual problems for solution. But each type having its own definite dynamical forces which produces the defect, has its own general principles to be followed as a basis for treatment intended to correct the defect and relieve the symptoms.

I have elected to speak of the pronated foot.

It is the most common type of the weakened non-deformed foot producing pain that exists without change in the bones of the tarsus and metatarsus. The pronating force is active in the production of flat-feet, difficult there to overcome, hence of interest. It presents, too, one of the most interesting problems in that part of orthopedic surgery concerned with the application of apparatus for the correction of a faulty anatomical position attended with disability. I have selected it also because this vicious position plays an important and sometimes dramatic part in the relief of symptoms in feet, ankles, knees and hips, that having passed through a severe acute or chronic arthritis of any nature are painful, not from disease still existant, but from the fact that the relation of the bones forming the joints has been so altered that the leg transmits the body weight and the feet sustain it in a manner productive of joint strain.

I shall confine myself as briefly and strictly as possible to only those anatomical, dynamical and mechanical principles concerned in permitting and correcting the trouble.

The clinical importance will be shown by a report of a few typical cases. It is necessary first to picture the best type of foot. The position of strength is that position in which the foot acts most effectively as a lever; the position of weakness, whether unconsciously assumed or forced on the foot by some of the many impositions possible, is that position in which the foot as an anatomical lever is placed at a disadvantage to do its work. All of these attitudes are simply expressions of how the body weight is borne.

Von Myers' rule formulates the accepted ideas as to the proper

relation in position of the foot to the legs: "The line of the crest of the tibia if prolonged downward should pass over the dorsum of the foot to the cleft between the second and third toes, the inner border of the great toe, the inner malleolus and the inner condyle of the femur being in the same plane."

This agrees with the best type in nature.

The foot of an infant shows unimpaired muscular power in the movement of all the toes. The great toe can be voluntarily adducted, the fifth adducted; all can be markedly flexed. There is a space between the great and second toe. The toes are straight. The infant adducts frequently the great toe, demonstrating great freedom of its motion. The line of the extremities of the toes forms a curve with the greatest point of convexity at the end of the second toe. The line of the heads of the metatarsals present the same curve. The line of the inner edge of the foot is apparently straight. Though small, is a perfect minature of the strong foot, its toes straight, its motions free. Young children in beginning to walk always place the feet with their axes parallel or with a slight toeing in.

The inner edge of adult feet that have not worn shoes nearly always appear straight; the great metatarsal is comparatively greatly developed; the prehensile strength increasing with age up to a certain limit.

Barbaric models and Egyptian sculptures, types of the bare-footed and sandal-wearing people are characterized by the parallel relation of the axes of the feet in the standing position, by the straight inner edge of the foot and straight toes. The early Indian, Burmese and Egyptian art, show this to be true, and the classical type of sculptures, represent the line of the inner edge of the foot as always straight with an extremely small angle of divergence of the axes of the feet in the standing posilion. This is true of the Greek and Roman art.

Individuals who have never worn shoes walk with the feet directed almost straight in front. The moccasin-wearing and bare-footed races of today with whom foot activity plays an important part in obtaining a livelihood, either slightly toe in or walk straight. The muscles of the front part of the foot are strongly developed. If the gait of an athlete is observed it is

seen that the feet are advanced in a straight line or with a very slight angle of divergence. It is interesting here to note that the talipes equinus deformity with the front part of the foot adducted, is the strong type. Individuals possessing this deformity move actively though awkwardly. Contrast this with the slow, halting, rolling, weak gait of the valgus type of deformity with the foot adducted. As shown then by the bare-footed and sandal-wearing races of antiquity and today, by those who are active with strong muscles in the legs and intact feet, the position of strength is with the feet parallel, that is, with the front part of the foot adducted, the inner edge of the foot straight, apparently with great prehensile strength. I wish you to bear this in mind, it has its clinical significance and is to be contrasted with the weakened position to be described. The reasons that this supinated position is the position of strength, are as follows:

The foot has two anterior posterior arches, an inner and an outer one. They are distinctly opposite in character of construction and hence in function. The outer one is composed practically of only two bones, the os calcis and cuboid, closely bound to one another with little play of motion between them at their articulation. The metatarsal of the fifth enters into the formation of this arch with the foot in the non-weight bearing position, but must be excluded from it in the weight bearing position, for then throughout its whole length it rests upon the ground. This arch is short, compactly built and always rigi d The inner arch, twice as long, with five bones entering into its formation, oscalcis, astragalus, scaphoid, cuneiform and first metatarsal with several muscles attached to it, flexible, possessing a wide range of motion compared to the outer, is constructed not for passive weight bearing, but to sustain a great and sudden shock, without jar, to yield slightly and then rebound to its former position in the final spring given to the completion of the step. It is this arch and its attached muscles that make the gait active and springy.

The outer arch is built then to stand passive weight, bearing all the time as in standing and very seldom does it ever yield. The inner arch should bear the weight only momentarily in the

completion of the step in walking, and quickly shift the body weight outwards to be borne again by the other arch as soon as the foot is placed to the ground. This can be demonstrated: Make yourself conscious of pressure on the sole of the foot in standing with the foot in the supinated position, axes parallel, front part of the foot adducted. You feel the pressure under the heel and outer portion of the foot and beneath the heads of the fifth, fourth, third, and to a lesser extent the second metatarsal. You are conscious in this position of very little pressure under the head of the great metatarsal. It is not felt there to any extent until the heel is raised in taking a step. More convincing is to place an individual on a glass table in the standing position with the foot in the strong portion, supinated as before described, the axes parallel so that Von Meyer's line may be drawn. The dead white area of pressure, if you look at the under surface of the foot, through the glass, is seen to extend over the heel and from the fifth metatarsal into the second as above mentioned. This is the strong position for when it is assumed the body weight is borne by the strong unflexible, unyielding outer arch, the inner arch bearing very little of it.

When on the contrary the weight is borne on the inner arch, sufficiently to tire out the tibiales, flexors, and adductors of the great toe it yields from this passive support to which it is not adapted in structure, its ligaments become stretched and the excessively pronated foot with its train of symptoms and lameness results.

This vicious position is the attitude in which, in the habitual standing position the foot rolls over inward instead of being supinated the inner edge of the foot shows a reverse curve with its convexity inward instead of a straight line or slight curve with its convexity outward, the front part of the foot is abducted, and the outer edge of the foot rolls up, the front part of the foot being rotated inward as well as abducted. The line drawn through the crest of the tibia and over the dorsum of the foot representing the direction of action of the body weight, passes off the inner arch of the foot at the astragalo-scaphoid articulation instead of at the cleft between the second and third toes. The dead white area of pressure seen from beneath the sole of

the foot through the glass plate shifts inward until the most decided points of pressure are beneath the heel and the head of the great metatarsal. This is the result of the body weight being supported by the weak inner arch, applied at its weakest portion, the astragalo-scaphoid articulation. The inner arch is not constructed for this kind of strain and it yields with pain. Always, even in strong feet in standing and walking there is a slight downward and inward yielding of the inner arch which may be called physiological pronation. Its physiological limits can not be determined in degrees for it varies in the two feet of an individual, still more so in different individuals. The pronation with its symptoms is the same motion carried further until it produces strain, the same in kind, but excessive in degree.

Lovett has analyzed the movement of the bones in the pronated attitude by a study of 41 X-ray plates of painful pronated feet. Results of his studies may be summed up as follows:

1. The appearance of the feet is as represented in the above paragraph.

2. The foot as a whole, rotates beneath the astragalus into the position of valgus.

3. The astragalus is rotated inward on a vertical axis so that its head moved inward and backward, its body outward and forward. There is at the same time plantar flexion of the astragalus by which its head sinks into the sole. This is the key note of the position.

4. There is some outward movement of the cuboid.

5. The front part of the foot is abducted, moving outward, the tendency being for the foot to break open outward (if I may use the term) at the astragalo-scaphoid articulation as the hinge of motion.

6. Anterior to the astragalo-scaphoid articulation there is no change in the relation of the bones, the whole front part of the foot moving en masse.

7. The oscalcis rotates in a valgus position.

The detailed mechanical and anatomical explanation of the strong position and of excessive pronation is best seen by examination of a skeleton. Consider the body weight to be a force acting downward in the direction of the axis of the shaft of the

tibia; it is opposed by an equal force acting oppositely upward in the direction of the shaft of the tibia. The same is true with the foot in regard to the direction of the body weight forces acting through the axes of the small bones of the tarsus and along the shafts of the metatarsal bones. The strength or weakness of the foot is determined by the movement permitted the astragalus.

The astragalus has no muscular attachments, it serves simply to transmit the force of the body weight from the end of the tibia to the foot, splitting it up into a number of components, some passing behind, some forward.

In the strong position, the supinated position above described, as shown by Golobiewski, the astragalus is tilted a little downward at its outer border so that most of the body weight through it is transmitted directly to the oscalcis, thus the force of the body weight passes backward to the tuberosity of the calcis to the ground and from the calcis in front to the cuboid, and from thence to the fifth and fourth metatarsal, the second and third metatarsal receiving their share of the weight through the head of the calcis to the outer end of the saphoid to the middle cuneiform and thence to their own shafts. Thus very little weight is left in the standing position to be transmitted to the inner arch. Note here that there is no plantar flexion or inward rotation of the astragalus as seen in the pointed foot, and that from the relation of the bones in the inner arch to one another and to the astragalus, it is not a difficult thing for the flexors of the great toe, the small toes and the tibiales, to bear what weight may be transmitted to the internal arch in the strong position. The result of that little weight being the physiological degree of pronation recognized as normal. If on the contrary the front part of the foot is by habit held in the adducted position so that Meyer's line passes off the inner arch at the astragalo-scaphoid point, the body weight being applied there, the tibiales and the other muscles attached to the inner arch, becomes tired and the astragalus is allowed to rotate inwards.

Then most of the body weight is applied to the inner arch; this is the pronating force. The astragalus splits it up into two components, one of these acts downward, it falls chiefly upon

the inner half of the oscalcis and the sustentaculum tali. The only direct opposition it has is from the tendons of the muscle, which passes beneath the sustentaculum tali, use it as fulcum for their action, lifting up the sustentaculum tali and preventing the calcis from rotating in a valgus position so long as the toe or these muscles is normal. If these muscles are strong and the foot is used in the mechanically strong attitude of supination they prevent pronation at this point from being greater than the physiological degree, but if conversely from the assumption of the disadvantageous position with the greater part of the body weight, thrown on the inner arch is so greatly increased that they are not strong enough to oppose it, they play out, the weight falls upon the ligaments at this point, then pain begins there and that part breaks down.

The other component acts downward, forward and inward, in the direction of the axis of the astralgus, from behind, forward and is applied at the inner end of the medio-tarsal joint at the astragalo-scaphoid articulation anterior to the point of support of the astralgus by the oscalcis beneath. This then must be opposed by structures anterior to the end of the astragalus.

Much more flexion is possible than adduction in the normal foot, consequently to permit no more than the physiological limit of pronation the foot must depend chiefly upon the flexors of the great and small toes. The reason why flexion of the great metatarsal in the supinated position overcomes the inward yielding, thus preventing excessive pronation, is due to certain anatomical bony land marks, of whose importance the anatomical books do not speak, to the relative position of the small tuberosity on the posterior end of the great metatarsal to the tuberosity of the internal cuneiform, its whole lower border, and this tuberosity to that of the scaphoid. The tuberosity of the great metatarsal faces downward, the tuberous border of the internal cuneiform faces downward at its articulation, with the great metatarsal then inclined upward and inward. The tuberosity of the scaphoid faces inward, so that when the great metatarsal is flexed by its muscles to the thrust of its little tuberosity by the time its effect is transmitted through the intenal cuneiform and scaphoid against the astragalus is not to lift the latter

upward, but upward, backward and outward, in direct opposition to the direction of the pronating force.

It is thus seen how the prehensile power of the great toe, by that meaning the power of the flexor longus and brevis and the adductor pollicis assisted by the tibial muscles prevent the pronated position, sustain the body weight temporarily but must give out if subject to constant strain. In the majority of cases presenting themselves for treatment on account of pain, the weak attitude with the front part of the foot adducted was first assumed unconsciously or forced upon the foot by using bad shoes. From continuous use of the foot in this position, the prehensile muscle acting at a disadvantage, the inner arch bearing the body weight gave way with ligamentous stretching. In those cases secondary to acute or chronic disease in the ankle, knee and hip, the adducted attitude was assumed because that is the position in which one may walk with greatest comfort with disease of the ankle, knee and hip. The reason of this is that the body weight falls entirely on the heel, and the patient unconsciously shifts it there by the attitude to keep from bending the diseased ankle, knee or hip. Later the attitude became permanent, partly from habit and partly from a changed relation of the bones forming the joints mentioned. The production of joint strain is due to the unstable foot bases in the pronated attitude. To present the clinical side of the condition which may perhaps alone be interesting to you, I submit the report of the following cases. The details of these cases will present the symptoms, physical findings, method of examination and treatment.

Mrs. B.—Several years ago she increased rapidly in weight, gaining about 40 pounds in nine months; she took very little exercise; led an apathetic life. The first thing that was noticed, was great weariness from little exertion, then both feet began to hurt, the pain being located at the inner and outer side of the ankle, at the attachment of the posterior tibial to the scaphoid and along the course of the tendon of the peroneus longus as it winds across the outer surface of the oscalcis. At night the knees and outer portion of the calf of the leg ached a great deal; this continued for about a year; she was able to get around, of

course. It was thought she had rheumatic gout. Both feet were pronated, the toes turned out, the ankle rolled in, Meyer's line passed off the internal arch at the astragalo-scaphoid articulation; dorsal and plantar flexion was possible to a normal limit, voluntary adduction was limited, the effort feeble; there was no flattening of the arch; the peroneus longus was in a state of spasm, adduction producing pain; a foot plate was applied, the highest lift of the plate being carried forward to the inner cuneiform, the tarsal pain was instantly relieved. The knee pain and aching in the leg disappeared in about a month after the application and constant use of the foot plate. The relation of the pronated foot to the pain in the knee and calf of the leg is definite clinically, and can be explained anatomically with perfect accuracy, but its demonstration is complicated and tedious, hence I simply refer to it. She will have to wear the plates all the time. This case and the one following illustrates the most common type of the trouble.

Case No. 2. Mrs. G.—She complained that she could not walk further than a few blocks without giving out; in Church she had to stand first on one foot then on the other; she had pain in the instep in both feet and back-ache; there was no knee pain; the feet were pronated but perfectly mobile; the ranges of motion, both voluntary and passive, were normal; there was no spasm; plates were applied; she can now, by using the foot plates, walk four or five miles with only that degree of weariness to be expected from this amount of exercise by a woman. She has to wear the plates only when walking a great deal. Here the interesting point was the relief of the pain in the back; its explanation is anatomical and mechanical too, but can only be demonstrated by a complicated examination of the relation of the angles of the metato-tarsal, ankle, knee and hip joints; it may be passed over for the sake of brevity by the statement that the position of pronation so acts that the back muscles are tired out to the point of aching with comparative little exertion.

Case No. 3. Mr. S.—His business kept him on his feet all day. At the time he was seen there was very great pain in the instep, at both sides and behind the ankle; in the heel and at the attach-

ment of the plantar fascia and the tendo-achilles. The ankle was pulled behind, there was a good deal of pain across the ball of the foot and just external to the attachment of the peroneus tendon, the patient walked with great pain; without raising upon the toes; with knees flexed, feet wide apart, seeking a broad base of support, like the gait of a feeble old man; all the motions of the feet were painful; dorsal flexion was limited by the spasm of the soleus; voluntary adduction was almost impossible; the tibial muscles being almost paralyzed by the strain they had borne; there was spasm of the peroneus longus, which, with no opposition on the part of the tibial muscles, held the front part of the foot in adduction. This represents the severest type of what one might term, acute pronated foot, approaching flat foot in its anatomical defects, with all the symptoms of that condition. Plates were applied, all the muscles of the feet, leg and thigh had to be gradually re-educated to take up their proportionate share in sustaining and propeling the body. He was put to bed, given massage, electricity, and exercised every hour and a half, going back to bed immediately after the exercises, in order to relieve the foot of passive weight bearing. The feet were put through the normal motions twice daily. Recovery was gradual, necessarily. After two months treatment he was able to return to his business. At present the right foot is perfectly sound; he does not wear a plate in the right shoe, there is no pain in the knees, the left foot is a little painful where the peroneal tendon winds around the cuboid if the plate is not worn in the left shoe, but with the plate in the left shoe there is no pain. This left peroneus longus is still somewhat spastic; the spasm will disappear when the voluntary adduction becomes a little stronger. His manner of walking now shows nothing wrong, except that it is not quite as active as it should be. In a little while he will regain entirely his normal strength and activity.

Case No. 4.—The effect of the pronated foot in this case was quite dramatic; the patient gave a history of having had a severe boil on his right patella in 1889; this followed an injury; the history of this suggested a suppurating pre-patella bursitis; it discharged for about six weeks; examination of the site of this abscess did not suggest that there was originally any bone dis-

ease. The knee at the time of the trouble was bandaged, a posterior splint extending from the buttock to the ankle was applied. It was thought that there was a connection between the abscess, the patella and the joint. After the place had healed, the joint was immobilized for about eight weeks; the pain ceased after the healing and the muscles of the leg had atrophied, from disuse. At the end of this period, fourteen weeks after the beginning of the trouble, he started to work clerking in a store, standing on his leg all day; the pain in the knee joint immediately returned, it was the same but from a different cause now, tho' the attention of the patient and the attending physician was centered upon the idea there was still a disease in the knee joint. He had begun to use the leg with the foot in the pronated position, and this was the cause of the knee pain, there was some pain too, though little, in the ankle. He was advised not to use the leg much, and since 1889, had walked with a crutch and cane. He presented himself for treatment last October; the motions of the knee, hip and ankle were perfectly normal; the leg was atrophied and flabby, the foot was pronated. This was the whole trouble; a foot splint was applied to properly support the foot; the knee and ankle bandaged with flannel bandages to give some support to them; the leg was given massage, the cane was at once discarded; he was put on exercise, tonics, the exercises being gradually increased. In six weeks the crutch also was discarded; the patient walked with perfect comfort and a natural gait.

DISCUSSION.

Dr. Munroe.—I am sure the society enjoyed the doctor's paper, and in behalf of the society I desire to thank Dr. Hoke and request that he turn the paper over to the committee on publication.

Report of the Section on Gynaecology.

Gynaecology: Its Present Status and Possibilities.

By H. S. LOTT, M. D., Salem, N. C.

The scope of my subject is large; and while I do not expect to cover the entire ground, I hope to present some facts worthy of your consideration.

Gynæcology, of all the branches of our work, is pre-eminently a special branch— offering success alone to those endowed with taste, talent and tact.

Taste for the work, born of a desire to make the lives of their patients more comfortable; talent, which enables them to recognize a departure from the health line in the female economy, and also suggests the safest, and most certain method of restoring the normal tone; and last, but not least, the tact wherein is blended the firmness of the surgeon with the gentleness and wisdom of the trusted physician.

Having been given more thought, gynæcology has, I believe, also received more light within the last decade than any other branch of our work. To-day we recognize actual conditions not shrouded in mystery and have learned to apply actual remedies freed from empiricism.

At a former meeting of this society, I was asked by a member, whose good will and good wishes I value greatly, what I would do instead of the procedures I condemned? The question was right and fair, but I did not know the answer; nor do I now, in full. No man can sum up his life-work at the start, and the solution of the problem lies in a life-work only. The procedures which I condemned then, I condemn now, as routine procedures; and believe them to be more often hurtful than helpful. To these procedures, viz.: incising the cervix for flexure, dilating and curetting the virgin womb, and vaginal puncture, might be added the fanciful intra-abdominal bow-knot and suspension

operations for haltering up the uterus, which are done rather for the notoriety which they bring, than for the help to the patient.

The mechanical operator does many unnecessary things; and therein he differs from the gynæcologist. For instance, during a recent visit to one of our largest hospitals, I was most forcibly impressed with the amount of unnecessary manipulation involved in the routine practice of investigating all of the abdominal viscera in reach before closing the median incision. And while recognizing the operator's skill with the knife, it seemed to me that there was less thought for the vitality of the patient than for the telling effect of the diction, calling out to his audience, as they were explored in order, appendix, gall-bladder, right kidney, etc., etc., thus invading the home of each vital organ (it being convenient) and giving his finding as to their proper make.

The pity of it, that people can't all be made just as the books say they ought. How much troublesome patching 'twould save the "scientific" (?) surgeons of to-day. How many trees in the forest are alike? And yet, all are nature's own handiwork, and each is perfect of its kind and fashion.

Did you ever go rabbit hunting? well, you know that in a pack of dogs there's always one that's just a little too good. He always jumps the rabbit and can outrun any dog of the lot, but he is so sure of his game and runs so fast that at the finish he jumps clean over bunnie and never catches him.

Now, there is much which the evolution of our science has taught us to do, and do rightly, but when hearing men stand up and advise students to remove the uterus for pueperal sepsis, or at the close of an extensive article on "Displacement of the Uterus, with Adhesions," advise the removal of uterus and appendages, for a cure, my mind reverts to the rabbit hunting days, and I know that in his hurry for the front he has jumped over bunnie. However, such extremes will come, and must be met and righted. And in the conditions found, which may be corrected to the patient's comfort and preservation, we have our true reward.

For instance, we know that the time honored "ulcer of the womb" has gone to rest, and together with pelvic cellulitis, endometritis, and a goodly group of the mysterious "itis" fam-

ily, is buried, with the brains of it originators. And we no longer treat this condition with a wise look, and swab and cautery, but tell the patient that it is a cervical tear, which could not be avoided but can be repaired, and furthermore, we may tell her that the repair should be done, and without delay, both for her present comfort and future welfare, our reasons being that such tears, neglected, are most prone to either cancerous or tubercular degeneration, soon involving the entire cervix, invading the pelvis, and ending her life.

Statistics show that cancer is much on the increase. This is due, in large part, as in tubercular condition, to earlier recognition, and in part also to the fact that cervical tears are neglected, either not cared for at all or treated with swab and cautery, which fans into life the dormant cachexia. There is a close relationship between cancer and tubercular degeneration of the cervix; both spring from the same prime cause, and pursue the same fatal course. The cancer cell is a vague, ill-defined neoplasm, not uniform, not always present even, in so-called cancer, whereas, tubercular degeneration of the cervix occurs where the diathesis is known to exist. This being the era of preventive medicine, the gynæcologist has no small share of responsibility. Without the guest chamber, we are not so sure of the guest, and in the prompt recognition of injuries to the cervix, vaginal walls and perinæum, with a departure from the normal tone inviting access to filth, and also a prompt resort to the procedures in plastic surgery which restores the parts to their normal condition, lies his path for work and usefulness.

Plastic surgery restores, creates. From this branch sprang the tree of gynæcology, which to-day has attained such vast proportions. The torn cervix, the recto, and vesico-vaginal fistulæ, the laxity of the vaginal walls which permits the bulging rectocele and cystocele, the weakened perinæum, and the lost sphincter, with the distressing chain of symptoms which follows in the wake of each, may be relieved, and the parts restored to their normal tone and supporting functions, by plastic surgery. There is no richer reward in the life of a surgeon, than the gratitude of a woman for whom he has united a torn sphincter.

This branch of surgery is close work, tedious work, and must

be done with care for every minute detail in its technique. Failures in it occur often, but they are due to either a faulty toilet or a faulty technique. The work is right, its indications are plain, and, if properly done, it will bring success. Nor is success attained through "special" crook, or "special" curve of needle or scissors, but through recognizing the main want and supplying it by clean, simple surgery.

As to endometritis, parametritis, pelvic cellulitis, and the balance of the "itises," no doubt inflamed conditions of these regions of anatomy do occur; but they are symptoms only, and demand medical rather than surgical treatment. Ideal surgery seeks and removes the foreign body, the focus of irritation; thus aiding nature in her work, and leaving the parts and system in better plight for healthful reaction. Sharp instruments and chemicals applied to mucous surfaces are always hurtful, and leave the part or organ in a maimed condition.

Thus, within the pelvis and abdomen we have conditions which may be detected and relieved by operation. People are no longer satisfied with mysterious wisdom, but demand to know what is the matter, and what should best be done for their relief.

The small cystic or tubercular ovary is a most fruitful source of menstrual pain; the fault being charged to the innocent uterus, which may be normally tilted one way or the other, as its Maker made it, with a long cervix and a small cervical canal.

The vivisectionists say that this pain is most beautifully relieved by black haw—in frogs! but I must confess that I have never seen the slightest resemblance between a woman and a frog, nor do I believe that they are at all alike, either in organism or function.

Lawson Tait has said that the "vaginæ of women differ as much as their faces." The same might be said of the uterus, in the fulfilment of its normal functions. Women menstruate as they do other things; no two are exactly alike.

Pus in the pelvis means, most often, either a pus tube, an abscessed ovary, or an elongated and adherent appendix, pointing south, with a perforation, near which an abscess has formed.

Here the relationship between the pelvic and abdominal organs

is so close, and their symptomatology so blended, that the field and work of the gynæcologist are extended to that of the abdominal surgeon. A knowledge and understanding of obscure pathologic conditions which may occur in both cavities, are essential to the making of a clear diagnosis, and advising the best source of relief, in any given case. In fact, a suppurating process with its start in the pelvis and left undisturbed is most apt to invade the abdominal viscera—for instance, and most especially, the kidneys—and result in organic disease.

But we know to-day that such unfortunate sequelæ may be prevented, by early recognition and early evacuation of the pus; that an immense abscess, incarcerating all pelvic viscera in its bands of inflammatory adhesion, may be opened and drained of pints of foul smelling pus through the median abdominal incision, kept open for days, and then allowed to heal; leaving the woman in possession of functionating pelvic organs. Such a case has been mine during the past year. The woman having been bedridden for months, refusing operation, for what I told her was pelvic abscess. Finally, in extremis, she consented; and, in searching for a plane of cleavage, the abscess wall was ruptured, and the pus poured forth, much to my discomfiture at the time, but the patient's condition was such that I did not feel justified in attempting an enucleation of the pelvic contents, while feeling that it was a very poor and incomplete piece of surgery. I contented myself with washing out the cavity with salt solution, walling off the abdominal organs with gauze, as well as I could, putting a gauze drain into the pus sac, closing the upper two-thirds of the abdominal incision, and putting my patient to bed. The after history of the case was as stated; the pus drained out for days, but the patient was free of pain, and hungry, from the hour of the operation; and at this time, nearly six months having passed, she is in better health than ever before; having gained much in weight, and menstruates regularly at intervals of one month, without pain.

The clinical history and symptoms of these important conditions, which may be recognized and relieved, pursue a constant and well marked course.

Considering that they are, primarily, of local origin, with

local physical manifestations, indicating both functional disturbance, and organic lesion, they should, by the lights of today, be recognized, as are pneumonia, pulmonary tuberculosis, or other like conditions, by the lights of the past. If they are not, it is due only to the fact that they are not believed in as they should be, and given the careful thought and study they deserve. The time is not long past when many of us doubted the existence of disease of the appendix as a surgical condition. But this was before we had taken the time and the trouble to educate ourselves in the newer pathology, and we now know that it not only occurs frequently, but that many lives have been lost through our ignorance.

Thus, obscure conditions within the pelvis, as the small cystic and tubercular ovary, the pus tube, the small abscessed ovary, and, in its early weeks, the misplaced product of conception, so fraught with pain and danger to their victim, should today be recognized by a careful and systematic examination of each and every patient.

It is in the beginning, by an early recognition of congested conditions, before the breaking down of tissue has begun, that by proper care for the patient, and proper rest for the organ concerned, the formation of abscess may be prevented. Or, if it occurs, and the presence of pus is established by recurrent chills or chilliness, continuous slight elevation of temperature, recurrent paroxysmal pain throughout the pelvis and abdomen, this pain being of an expulsive character, with exquisite tenderness at a given point, which is guarded by a rigidity of its overlying muscles; then the evacuation of the poison, through an abdominal incision, with the removal, so far as may be consistent with the vitality of the patient, of all disorganized or diseased tissue, and a thorough cleansing of the parts, promises best for her future well-being.

The Conservative Treatment of Diseases of the Uterus.

By JOHN THAMES, M. D., Greensboro, N. C.

It would be very difficult to define the difference between the conservative and radical treatment of diseases of the uterus; under some circumstances this organ may be so peculiarly diseased, until the most conservative treatment would be the most radical.

Within the last decade the cry for conservatism has been so great throughout this country that considerable harm has been done to the uterus and other pelvic organs by incomplete conservative operations that had to be completed later on by the most radical.

The general practitioner is called upon to treat many cases, even of an aggravated form, that can be treated on "general principles," where to palliate and assist nature is the most conservative course to pursue. On the other hand, a simple catarrhal inflammation may prove fatal if treated in the same way.

A thorough knowledge of the etiology of diseases will materially aid the physician in determining the plan of treatment that would be the most conservative: For example, two patients come to your office, the symptoms of each alike, both give a history of having had metrorrhagia and menorrhagia; and other symptoms that follow subinvolution from any cause. Upon examination, in the one we find an enlarged and inflamed uterus, probably some fungus growth, a dilated os without any lacerations: a condition brought about from frequent pregnancies and an over amount of household cares and worry. The other has a larcerated cervix with ulcerations—will bleed on touch, a condition caused from instrumental delivery or improper management during labor; or may be from criminal abuse. The first can be successfully treated by a change of location, complete rest and suitable drugs. This plan under ordinary circumstances, would be the most conservative; while in the other, to palliate would only aggravate.

Accumulated experiences have shown that any laceration of the cervix is one of the most common pre-disposing causes for malignant degeneration, and cases of this kind, when left to

nature, even under the most favorable conditions, will generally terminate in cancer of the uterus and its appendages. When this is once established, death is inevitable. All cases of this nature, and from said cause, in my opinion, should be submitted to the most radical treatment, early, before the disease involves the surrounding tissues. To do a radical operation to prolong life would be the most conservative.

I am proud to be able to state that at present, by the modern methods of operating, supra-vaginal and panhysterectomy has so far reduced the mortality following removal of fibroid tumors until the practitioner, if he is endowed with an average amount of skill, under favorable circumstances and clean environment can with safety relieve his patient from the burden of her tumor —at the same time she rejoices in the possession of her essential female organs.

Because of the splendid results obtained from surgical operations within the abdominal cavity by experienced and skilled operators, the former fears and dread have almost entirely disappeared from the minds of the laity, and the surgeon is confronted by the question, not as to whether they will get well, but a more serious question, possibly, whether or not they will be "unsexed" as they call it, by the operation.

Of course, what a patient wants is health and will undergo almost anything advised by her physician and consulting surgeon to obtain it. This has been deeply impressed upon me in two instances recently. The women had been long sufferers and begged of me that if I thought it would restore health and relieve them of their pain, to remove all. They were willing to sacrifice their organs of sex for the sake of health. Yet the thought of a complete removal of both ovaries, tubes and uterus carried with it an indescribable feeling of abhorrence that they would be so very different from other women.

It is gratifying to me to know that the accumulating experience and improvements in abdominal surgery has made it possible to save many important sexual organs of the human that were formerly sacrificed, even by such noted surgeons as Lawson, Tait, Hegar and Battey, to arrest the growth and hemorrhage of fibroid tumors of the uterus, and for the relief of inflamed and suppurating diseases of the uterine appendages.

In this special field sacrificial surgery is fast giving way to more conservative methods of saving all the organs possible. In abdominal surgery, as in any other, it requires more skill to save a mutilated or diseased member than it does to cut it off or cut it out.

Drs. Kelly, Dudley, Mann and others who are adopting the plan of saving, show by their records when the uterus, tubes or ovaries were affected by tumor, the diseased part was dissected out and the healthy portion stitched together with full recovery, thereby preventing the woman from being entirely relieved of all her sexual organs and causing a premature menopause with all its trouble.

At present the cruel, inhuman craniotomy is being displaced by the more scientific, conservative, improved Cæsarian section. The improved, conservative and successful Cæsarian section has not only replaced the radical inhuman sacrificial craniotomy, but has lessened to a great extent the causes of lacerated cervix, that are usually followed with grave complications and calling for a secondary operation.

After all, the real conservative treatment of diseases of the reproductive organs of the female, is the preventive treatment. The young girls should be trained in hygiene, and that the highest duty they owe to humanity is a proper care and development of their physical, as well as their mental bodies, through a strict obedience to the laws of nature, thereby best fitting them for the highest office of wifehood and motherhood.

The divine purpose of woman has ever been recognized, but it is evident from the amount of invalidism, nervous exhaustion and number of operations performed among the women of to-day, that she has neglected the most precious gifts which nature has endowed her; she has failed to appreciate those qualities and powers which are hers, and would make her most valuable to humanity.

Etiology and Treatment of Menorrhagia and Metrorrhagia.

By W. W. McKENZIE, M. D., Salisbury, N. C.

"Menorrhagia is the term used to designate an excessive loss of blood at the menstrual period. Metrorrhagia is the term used to designate a loss of blood from the uterus at other times without any reference to periodicity. Time was when these two subjects were a long way apart, but it is now perceived that all red fluxes from the uterus are essentially hemorrhages, and all akin. When we meet with a metrorrhagia which begins in an intermenstrual period, continues with increased volume through a menstrual period, and so runs on for weeks, we perceive but very little difference between the two affections; or, if we encounter a case of sharp menorrhagia which each month lingers longer through the inter-menstrual period, to become at last an unbroken flow, we must admit that our classification is artificial and a matter of mere words."—Milliken.

The Cause of Menorrhagia and Metrorrhagia are both Constitutional and Local.

Abnormal changes in the blood and condition of the system known to have debilitating tendency, are the most prominent. As in anæmia in all forms we have a relatively great amount of water in the blood, and a relatively diminished amount of albuminoid substances, and diminished coagulability. Chlorosis in this regard as in many others, stands apart from the anæmia, for it tends to scanty flow if any.

2. In plethora the increased flow is due rather to high arterial tension than to a morbid condition of the blood.

3. In malarial poisoning we have the tendency to bleeding well marked, not only in the uterus, but also in the bladder, rectum, and nose.

4. "In the specific infectious diseases we have reason to believe that hemorrhage is often excessive by a combination of impoverished blood, altered blood vessels, and the debility of an organism that is too busy with the disease to make repairs in the uterus."—Reed.

5. From any form of debility, menstruation is apt to run

into excessive hemorrhage from inability to promptly repair the endometrium.

6. In puerpuric conditions we have a strong tendency toward menorrhagia, for in this disease the blood is altered in such wise that it has a manifest tendency to transudation, and a loss of the normal coagulability. Menstruation opens the door, and the flow is excessive.

Local Diseases above the Pelvis Causing Menorrhagia.

1. Violent emotion has often been known to increase the menstrual flow even to the danger point. We are obliged to assume that it causes vaso-motor paralysis. I have in my mind now a woman while menstruating received the sad intelligence that her husband, who was an engineer, was killed, and at once the flow became so profuse that I was afraid she would bleed to death before I could relieve her.

2. "Cardiac diseases with venous stasis, extravisation is invited, stagnant blood dammed back in the veins by an inefficient heart, seeks a place of least resistance, even in the male patient. In the female the place is indicated plainly once a month."—Milliken.

3. Pulmonary disease may run such a course as to obstruct the pulmonary circulation early; thus wearing out the right heart, and leading to venous stasis. Ordinarily the early course of the disease is toward amenorrhœa, or scanty menstruation, and the blood is rich in the coagulating principle.

4. In hepatic disease the return of blood from the uterus is impeded, and there exists in jaundice the hemorrhagic tendency which is the plague of the surgeons.

5. In splenic diseases, also, there is some obscure alteration of blood or blood vessels disposing to hemorrhage as in uremia.

All of these causes of menorrhagia are rare. In a number of abdominal tumors we shall find a great number of cases of menorrhagia due to pressure of the great venous avenues of return of blood, and to the perturbing influence of pressure on the uterus. Yet the commonest cause of menorrhagia after all is the fecal tumor so often present in the female patient. It like any other abdominal tumor of its size operates viciously by compressing

venous trunks; its pressure upon the uterus, directly irritates the organ; it is liable, through the sympathetic system, to irritate the nervous apparatus of the uterus and increase its arterial supply; by its downward pressure it aggravates every flexion and version; it slowly establishes a condition of stercoræmeia and hydræmia; it breeds a tympanitic tumor in addition to the solid fecal mass, and thus still more increases pressure. But for the etiology of menorrhagia, we look more to the bleeding organ itself, and its neighbors in the pelvis. The uterus and tubes are anatomically continuous, and virtually inseparable by dissection. These organs and the ovaries have a common nervous supply. The whole trio are fed by only two pairs of arteries and but few veins. It is therefore inherently probable, and it is clinically proved, that irritation or inflammation of one of these organs must lead to an exhalted function of the other two. Passing to the uterus itself, we note that one of the most common causes of menorrhagia may be found in the sub-involution of the uterus after abortion. Sub-involution may also occur after delivery at full term, especially if it is not followed by lactation. In the condition known as areolar hyperplasia, sometimes reckoned a true chronic corporeal metritis, we have a flabby atonic state of the uterus, with enough inflammation to determine much blood to the uterus, and to limit its power of repair after the menstrual wreck. Inflammation involving the endometrium tends to produce menorrhagia, and this tendency is especially well marked in the cases where large granulations are produced on the interior surface. Healed lacerations of the cervix and deep ulceration at the same site sometimes seems to be starting points for irritation that disposes to an increase of menstrual blood. In malposition of the uterus we have often the greatest irritation, leading to increased blood supply. In some of the malpositions the veins of the broad ligament become varicose from distortion, and long continued pressure, the blood returning from the small vessels of the endometrium passes into the uterine sinuses, and thence towards the heart by way of the veins in the pampiniform plexus, and it is evident that any limitation of the carrying power of the veins of this plexus will produce some degree of stasis in the uterus. Uterine tumors also

act in this double manner to cause menorrhagia; they vastly increase the normal irritation of the uterus, and they act in a mechanical manner by pressure or by dragging to block the veins of the broad ligament. Sub-peritoneal tumors do less harm than those which lie in the wall of the uterus, or under the endometrium. After incomplete abortion where some portion of placental tissue remains rooted in the endometrium, the menstrual flow is sometimes enormous.

A woman was sent to me by another physician from another town in this State, with a history of four or five miscarriages, the flow almost continuous from one abortion to the other, with frequent violent flooding attacks—had lost 35 pounds in weight; all this occuring within a space of seven months (during the year 1899). I at once curretted this patient, removing a great amount of placental tissue. After this I gave her a uterine douche daily for ten days of a 1 to 6,000 bichloride solution, after which the flow ceased, her temperature went down from 105 deg. F. to normal. She regained her health entirely, and is now seven months pregnant. In addition to the above treatment I gave her tonics (Fellows Syrup of Hypophosphites), iron, and cod liver oil.

Malignant diseases of the uterus often lead to menorrhagia at an early age, and at any age. Reineck and others have of late years developed the fact that in some cases of menorrhagia, the uterine arteries are sclerosed, prematurely old, prominent and incapable of contraction. They carry a maximum of blood, and necessarily tend to menorrhagia.

A few days ago I was called to see a woman, aged 30 years, who was having a profuse hemorrhage from the uterus. It did not last very long, and stopped of its own acord. She told me that she was operated on by a surgeon in Richmond, Va., several months ago, he removing her ovaries, tubes and amputating the uterus. She has this menorrhagia every two or three weeks regularly. I can only account for this menorrhagia in this way: Possibly a part of the cervix was not removed, and the hemorrhage is due to that. I mention this case as it is a very singular one.

Treatment.

The treatment for menorrhagia is first to remove the cause. If it be due to plethora the tendency is to automatic palliation, and later the volume of blood may be diminished by purgatives, exercise and restricted diet. In all forms of hydræmia the treatment must be toward restoring to the blood its nutrient principles, and especially its saving power of coagulation. The bowels should be kept open by a mild purgative; the woman should lie down; her feet should be kept warm day and night. In urgent cases the tampon should be applied in such a manner as to correct any malposition of uterus, and it should make strong pressure on the cervical tissues. No styptic substance should be used, since it is not the object to coagulate the blood in the vagina. Some antiseptic substance should be used on the tampon like boric acid, which is only slightly toxic, is inoffensive, and has a slight acid reaction, to avoid neutralizing the normal acid of the vagina. In extreme emergencies, the uterus might well be flushed with hot water at a temperature of 110 or 115 under asepsis, and with free return of fluid secured. The emergency passed, we should endeavor to improve general nutrition, and to enrich the blood by giving iron alternated with arsenic.

Menorrhagia complicating the acute infectious diseases is seldom severe or long continued. In the exanthemata it usually declines with the development of the cutaneous eruption. In scorbutus the treatment is dietetic. In malaria, treatment for the toxemia will accomplish brilliant results even in an emergency.

The chief danger in menorrhagia is that the physician will seek for a cause in the pelvic organs, and overlook some profound disease or dyscrasia. When this effect is due to pulmonary and cardiac diseases the only treatment necessary is directed to a relief of venous stasis. And the treatment of abdominal tumors is a matter of surgery. The treatment of fecal tumors is of the greatest importance. They should be swept out by repeated doses of purgatives, and in severe cases it may be necessary to aid purgatives by enemas. When the bowel is well emptied, it is important to keep it empty to the physiological limit.

It has long been taught that a sharp purgative preferably mercurial given a few days before menstruation has a distinct curative effect in some cases. Supposing the bowels to be in good order, we may resort to ergot and its allies, with the hope of permanently contracting the fibers of the uterus, and the muscular fibers of uterine and ovarian arteries. This treatment is of no avail in an emergency, but under ordinary circumstances should be maintained for one or two months at least. Excellent results will sometimes be obtained by giving iodide potassium for ten or twelve days previous to the menstrual period. The dose should rise as rapidly as tolerance will permit from ten to forty grains per day, and be there maintained until the second day of menstruation. In rare cases supposed to be caused by ovarian irritation, the bromides will diminish the flow. They certainly tend in the main to diminish the flow, and as Ernst, of Vienna, has pointed out to increase the interval between the menstrual period. Electricity has doubtless a place in the treatment of this affection. The positive pole in the uterus, carrying a galvanic current has admitted hæmostatic effect, the current being cautiously raised to from 30 to 50 milliamperes. Later, in the absence of hemorrhage or inflammation, the current may be increased. In emergencies the current used in the interior for hæmostatis may be raised to 150, and it may be understood that it is then positively cauterant. Strict antiseptic technique must accompany this treatment.—Goelet, New York Medical Record, March 29th, 1891.

Desperate cases of menorrhagia may require the induction of the menopause by the aid of a surgeon. Metrorrhagia in young married women should excite suspicion of incomplete abortion. In such cases curretage should be done at once, with every antiseptic precaution. While if not followed by strict antiseptic measures, it is a worthless and dangerous expedient. The surgeon should prepare his hands by first scrubbing well with soap and water, and then passing them through the permanganate solution and oxalic solution, and finally bichloride 1 to 4000. Instruments should be sterilized. The vagina should be thoroughly cleansed by hot water and bichloride solution. In mature life metrorrhagia much more than menorrhagia should excite

suspicion of uterine cancer. In metrorrhagia interuterine application will work a cure in a larger proportion of cases than in menorrhagia. The cervix being sufficiently dilated, iodine in solution, phenol, pure, diluted or combined with iodine, creosote in solution, or tannic acid, or if you have neither of these you should use vinegar. This may be carried up to treat the entire endometrium with the hope of reducing succulence or atony, or reducing inflammation. The solution of these, and other styptics and cauterant substances is often made in glycerine, and that solvent by virtue of its great avidity for water is able to deplete the endometrial tissue and new growths. When due to polypi or other growths, of course the treatment is for the removal of the same. I was treating a case of metrorrhagia for 5 or 6 months during the year 1897 before I ascertained the cause. I suspected the cause, but the patient would not submit to a vaginal examination until the hemorrhage became so very alarming she at last consented. Upon examination I found a very large polypus, which was removed. This put an end to the hemorrhage immediately.

Report of the Section on Obstetrics.

By FRANK H. RUSSELL, M. D., Chairman, Wilmington, N. C.

Mr. President and Members of the North Carolina Medical Society:

During the past year there has been much study and work done in this branch of medicine, the result of which has been principally the improvement of methods already known, thereby giving us fewer deaths and better recoveries.

There is yet much room for improvement, as many gynæcologists say that 40 to 50 per cent. of their patients date their trouble from childbirth, and a great many of these troubles should have been prevented. As a means of prevention, I think reform in obstetrical nursing would accomplish much. As a rule this line of nursing is done by the same class of nurses as did it 50 years ago. In every other branch of medicine we no longer rely on any nurse the family happens to fancy; if the case is at all important we demand a good nurse, and so it should be in obstetric cases. When circumstances permit, have a trained nurse; otherwise have an intelligent white nurse. Every physician can select several young white women from his acquaintance who are anxious to work and have a natural turn for nursing. With a little trouble and in a very short time they can be taught the management of cases. I have tried this plan and find that it is productive of good results. I do not compare these nurses with trained nurses, but they provide for a class of patients who are unable to get the best, and a very large class it is. After every labor there is more or less contusion and laceration of the maternal soft parts, and which cannot be prevented, and whether these heal by first intention or leave a hyperplasia, or a subinvoluted uterus, with the long train of symptoms dependent upon these conditions, depends largely on the nursing, clean or unclean.

Relief of Pain.

Relief from the pain of child-birth has been a subject of study

by many, and everything that offers hope is tried. Cocainization of the spinal cord is being tried. In July, 1900, Kries, of Germany, reported several cases.

W. R. Stone, of New York, February Journal of Obstetrics, contributes a very interesting paper. He says: "This method was amply demonstrated at the New York Maternity Hospital, having used it 35 times with absolute results in every case. The effects of the injection lasted from ½ hour in the shortest to 4½ hours in the longest case, the anæsthesia being complete, so that not only was the skin free from painful sensations and the uterine contractions in no way retarded, but the latter occurred without the knowledge of the patient.

Method.

Dr. S. Marx, of New York, has had in the neighborhood of 200 punctures with two failures, both in intensely neurotic women. He uses the following method: Patient in exaggerated inclined position, back rendered sterile. The solid hypodermic syringe, which has been boiled for ten minutes, is used. The thumb of left hand is placed on spinous process of fifth lumbar vertebra; the injection is given between the fourth and fifth spines; the needle is inserted in front of and over the edge of thumb, the direction being from above downward, and without inward; if the lamina is struck, move the needle gently up and down until it passes; the point is pushed in until a clear fluid runs out. As much of the cerebrospinal fluid is allowed to escape through the needle as cocaine solution to be injected, in order that pressure in cerebro-spinal canal may not be altered; then the syringe is screwed on, disturbing the needle as little as possible. The cocaine is then injected, 8 to 15 minims of a 2 per cent. solution, representing 1-0 to 1-4 grain of the salt. The needle is held in site for a minute to plug the arachnoid puncture and increase the impossibility of the escape of injected fluid. After this the puncture is sealed.

Action.

A few minutes after injection the patient complains of tingling or coldness in lower extremities, nausea and projectile vomiting which lasts only a short time, a gradual numbing of painful

sensations; in less than 10 minutes the patient lies absolutely at rest with closed eyes, pain abolished, while the mechanism of labor progresses uninterruptedly. In many cases an intense headache comes on a few minutes afterward which may be relieved by nitro-glycerine or hydro-bromate of hyoscine. The time to give injection is when the cervix is dilated about the size to admit four fingers and is getting thin. Several injections may be given during a labor.

The patient must be told to lie down or the abdominal muscles will not be used.

It is claimed that all of the operatives procedure in obstetrics may be done without the slightest pain.

Many who have used it report unfavorable symptoms, very troublesome nausea and vomiting, depression, severe and protracted headache, involuntary movements from bowels and bladder, partial paralysis of lower limbs lasting for several days.

From its present status I cannot see the advantages over the old way of relieving pain. I think we very often overlook this very important point, relief of pain. In nearly every case a hypodermic of ¼ to ½ grain of morphia should be given in the first stage; this relieves the pain and nervousness and lessens the amount of chloroform used. As a rule, we should give chloroform in every case. Many cases require a very small quantity, often a few drops given at beginning of pain has a happy effect, makes the patient forget the pain as soon as it is off and keeps her comfortable between pains, and knowing that we are trying to relieve, it often has a good moral effect. Too much chloroform retards labor, and it should not be pushed until head infringes on perineum.

Normal Salt Solution in Obstetrical Practice.

This remedy has passed the experimental stage and is of great value in the treatment of many complications, as post partum hemorrhage; after hemorrhage is controlled this is our best treatment. Enough should be used to affect patient's pulse. The same treatment is used for the acute anæmia produced by placenta previa.

Puerperal Sepsis, Eclampsia, &c.

The reports which have come in during the past two years,

show most remarkable recoveries due to this treatment. Patient pulseless, bloodless, unable to rally as there is not enough fluid for the heart to contract on, fluid is furnished by introduction of solution, circulation goes on and patient recovers.

The Toxemia of Pregnancy.

This is probably the most frequent complication we have to contend with, and although there has been much study of this condition, we are still unable to control it. The cause is unknown and treatment symptomatic. The present belief is that it is a combination of waste products coming from the glands of the entire system and not alone from the kidneys, as was at one time supposed. All of the glands have an extra amount of work thrown on them during pregnancy, and in many cases they are unable to perform it, hence the waste products in the system. The eliminative treatment gives the best results and supports this theory.

Prevention is what we should strive for in this condition. The patient should be carefully watched, especially should the urine be examined for albumen, and the amount of urea excreted be kept up with, and the amout of urine passed in 24 hours be noticed.

It is claimed that to test the urine of a pregnant woman for albumen alone is negligence. The urea should also be estimated; many patients who do not have albumen in their urine have severe toxemia. A great amount of study has been given to this subject, and at present the result may be summed up in greater attention to prevention.

If toxemia is present, which is shown by urinalysis and general condition of patient, the usual eliminative treatment, diet, etc., must be resorted to. Compound jalap powder, tinct. iron, tr. digitalis, in some cases, and the free use of Lincoln lithia water in all cases, are our best agents.

If under treatment the toxemia increases, premature labor should be induced. I do not think that we resort to this treatment often enough. In a severe case of toxemia, nearly every labor comes on prematurely and with a dead child.

Grandin says: "In cases where albumen does not exist or only

in traces, and yet there is determined a steady decrease in the amount of urea excreted, expectancy may be fatal. The positive rule should be the evacuation of the uterus as speedily as may be, with due regard to the integrity of the maternal soft parts.

Eclampsia being imminent or present our treatment should be evacuation of uterus, as a rule venesection and protracted irrigation of the colon with hot saline solution.

Morphia is contraindicated because it defeats the object in view, paralyzing excretion from bowels and kidneys; veratum will lower the arterial tension, but does not control the toxemia. Arterial tension may be better lowered by means of large doses of nitro-glycerine, 1-10 gr. The only justifiable treatment of toxemia is the surgical before the active manifestations set in. Whenever the subject of Bright's disease conceives, just as long as the amount of urea excreted remains normal, we are justified in allowing gestation to continue. Whenever at any state the subject gives evidence of kidney insufficiency, which does not readily yield to treatment, it is preferable to trust to evacuation of the uterus, chloroform being used to control the seizures.

In regard to the use of morphia hypodermically to control the convulsions, I look upon it as our best remedy.

I have seen a good many cases where no prophylactic treatment was used, the mid-wife sending when the patient had a convulsion, probably before labor had begun. In all cases of puerperal convulsions I give 1 gr. of morphia hypodermatically, and if that does not control the seizures in one hour, I give ½ or 1 gr. more. With these large doses of morphia the patient takes very little if any chloroform, has no convulsions, and the work of emptying the uterus can be done as satisfactorily as under chloroform. If we do not use morphia the convulsions must be controlled by chloroform, and if it is a case of any severity, it takes a large quantity and has to be kept up several hours. Chloroforn given that way certainly interferes with excretion and depresses. Those who oppose the use of morphia do so for the reason that it checks secretion and excretion.

It does this, but it seems also to check the absorption of the toxines and probably prevents their rapid formation; in other words, it seems to hold things at a stand-still and gives us valuable time to accomplish the desired object, delivery.

I would like to hear this point discussed by our members, as many able men are opposed to the use of morphia in puerperal convulsions.

REPORT OF CASE.

On November 2d, 1900, I was called to see Mrs. ——, and found her age 21 years primipara, fairly well nourished, feet and legs œdematous, face puffy, color waxy. She was about 7½ months pregnant. I was called to relieve a severe headache which she had suffered from for 2 days. Urinalysis, color normal, reaction acid, sp. gr. 1030, albumen a large quantity. Total amount of urine passed in 24 hours small; excreted small quantity.

I commenced an active eliminative treatment, which seemed to do good for the first 24 hours. After this headache seemed no better, eyesight poor, partially deaf, muscular twitchings of face, flexors of forearm and legs. A consultation was held and it was decided to bring on labor.

One-half grain of morphia was given her hypodermatically, patient prepared as for an operation on uterus per vagina. A No. 6 soft rubber catheter was introduced into uterus, high up, by means of a wire stylex, which was withdrawn and the vagina firmly packed with sterile gauze. This was 9 P. M. Patient went to sleep about 1 A. M.; at 3 A. M. very restless, having labor pains and headache severe. Labor advanced well and at 6 A. M. she was delivered of a living child, and the patient had no convulsions although she was totally blind for several days and unconscious for 24 hours.

The usual stimulative and supportive treatment was kept up, and patient made a good recovery, the symptoms due to toxemia gradually disappearing.

The child was very delicate for 2 months, but now seems in perfect health. Had not the labor been brought on, I think we would have lost the child and probably the mother.

Some Observations Relative to the Time and Indications for the Use of Obstetrical Forceps.

By L. D. WHARTON, M. D., Smithfield, N. C.

In all the domain of medical science very few subjects are so universally interesting and withal as important to the well being and life itself of the human race, as the one I have chosen for your consideration.

From the point of view of a general practitioner it has interested me particularly, at times to my dismay seemingly conflicting with all I had even heard or read pertaining thereto. Consequently upon first being requested by the Chairman of this section to prepare a paper, my mind at once reverted to it as one that any body of medical men might profitably attend. I have not hoped to offer this society anything new or original. I offer no rules, no methods, my purpose being to bring the bare subject to the attention of the society, and perchance elicit some expressions of opinion and experience from members. Should this be the result, I shall have been more than repaid for my feeble effort.

All obstetricians will agree with me concerning the very great importance of the correct choice of time for the application of forceps in labor, and this is the objective point in this paper. There cannot be formulated a rule for practice in all cases, and therein lies the difficulty in the practical application of the instrument. The time then for the use of the forceps depends upon the merits of each individual case. As the American Journal of Obstetrics well says, "In many cases the indications are such as to admit of no doubt, in other cases it is simply a question of individual judgment."

This of course is influenced by the experience, and rightly so, of the accouchers, while I fear it is often largely and unduly influenced by his pre-conceived opinions or notions. In other words, this obstetrician differs from that one, naturally I may say, as to the danger point of approaching convulsions, excessive feebleness, threatened rupture of the uterus, dangerous hemorrhage, and asphyxia. They differ also as to impending danger to the fœtus from prolapse of the cord, complicated presentation

feebleness of cardiac pulsations and other indications for instrumental interference. How many in this society have stopped to examine the cardiac pulsations? I may have been remiss, but I confess I never have, and right here I am reminded of the following clipped from an old work on obstetrics, Meig's, which if true is quite a condemnation of my neglect in this particular. "The obstetrical forceps is designed to save the child, and that relief which is given to the mother is but an appurtenant to it;" and yet the same author says the "motive for the operation should be clearly understood as referable to the mother and child; to the mother alone, or the child alone." Parvin says "whenever the life of either requires immediate delivery."

Often indications, unfounded though they may have been, have arisen that determined me to resort to the use of forceps, when upon the expiration of a little time in the preparation for the operation pains have suddenly become stronger and more effective, culminating in a very short while in natural birth. Who will gainsay that the mother was not far better off not to mention the child? Delore suggested that if it happens that the obstetrician has not his forceps with him it is better to send rather than go for the instrument lest labor end in his absence.

Certainly not a few cases occur in which one or more indications for the use of forceps have been present and yet labor terminate safely in the natural way. Take for instance the indications that portends great peril to the life of the fœtus, viz., prolapse of the cord. I have more than once seen this complication, yet, for reason, delayed to apply the forceps and still without evil results to the child. The question, is the use of forceps permissable in order to shorten the mothers suffering, is often presented to us. Suffering is not given as an indication for its use, by any author that I consulted. Parvin asks the question, though does not answer it, but states that Spiegeiberg admits this, though says the operator must know his business, which is only begging the question. I am free to say that when labor is natural and no danger threatened nor anticipated, one would not be justified in applying the forceps. Sajous' Annual and Analytical Cyclopedia of Practical Medicine says

the forceps should never be used unless there are positive indications for its employment and I contend that suffering is not a positive prejudice to the constitution of the patient.

The latter authors states that the "forceps is the most important and useful instrument in the entire domain of obstetrical surgery, being both conservative and preservative," most heartily accepting this as beyond all cavil.

I desire to call attention to the word "preservative" in which the same author claims we actually anticipate the possibility of immediate or ultimate death of the mother or her unborn child. We do not have to wait until serious complications, that endanger the life of either, have arisen. We can often avoid the useless waste of strength and vital energy as well as untold suffering by rightly anticipating grave complication.

A very forcible illustration of this truth came to my notice a few weeks ago. Mother at the end of eight months' pregnancy, weak and exhausted from ovarian complications and neurotic tendency, having been confined to the bed for more than two months was considerably emaciated and having fainting spells. Labor pains, lasting an hour or two, entirely ineffectual but exceedingly weakening, at intervals of twenty-four hours, together with general condition and evil forebodings determined the operator and I, that forceps should be applied and labor ended. Thus anticipating danger ahead the operator applied the forceps to the child's head above the superior straight and saved both mother and child. Had we waited, the mother must have succumbed to exhaustion and the child lost. Owing to the complications of labor, independent of the mechanism, we had what Jewett terms an anomally of the expellent forces, and we knew natural labor was an impossibility. Then we may not always wait for specific indications. It is entirely possible to anticipate conditions with the knowledge we have of our patient's condition and idiosyncrasies that will justify instrumental interference.

Finally I know not better how to leave this subject with you than to quote a few lines on the subject from a report of the Rotunda Hospital: "Our established rule is that so long as nature is able to effect its purpose without prejudice to the constitution of the patient, danger to the soft parts or the life of

the child, we are in duty bound to allow the labor to proceed, but as soon as we find the natural efforts are beginning to fail and after having tried the milder means for relaxing the parts or stimulating the uterus to increased action, and the desired effects not being produced, we consider we are in duty bound to adopt still prompter measures and by one timely assistance relieve the sufferer from her distress and her offspring from an imminent death."

Report of the Section on Medical Jurisprudence and State Medicine.

The Problem of Typhoid Fever in the Rural Districts of North Carolina.

By H. W. LEWIS, M. D., Chairman, Jackson, N. C.

I have no apology to offer for bringing the subject matter of this paper before you. I have entitled it a problem, not because I can hope to solve it, for it will never be solved by the efforts of one man. It will never be solved by medical legislation, or the giving of pills and potion, nor the curing of individuals. It can only be solved by a long campaign of sanitary education among the people—the unwashed of North Carolina. "In order that men may appreciate their rights (said the great jurist, Blackstone) they must know them;" in order that men may live healthfully, they must know how. Whose duty is it to teach them this? Whose, if not the duty of the men who sit in the places of those, who in that elder day, protected this people from incompetency in their medical advisers by the establishment of the State Board of Examiners. Much of what I will say in this brief resume is matter of common knowledge to you all; to make pretense here of advancing anything new or original on this much written about and discussed subject, would be practicing a fraud. To take advantage of this occasion, to lecture or criticize my brother physician, would be in me nothing more than presumption. I shall attempt to discuss the subject of typhoid fever, only in its relation to state medicine.

The crowning glory of the last century was the development of preventive medicine. The labors of Pasteur, Koch, Klebs, Laverans, and a host of others, both in Europe and America, were not in vain. Sanitary science is now doing its work, and it is good. The way for the practical sanatarian is being blazed, and that so plainly that he who runneth may see.

Object lessons of the efficacy of modern preventive medicine are not wanting, and some are very striking. I need not mention them, suffice it to say, that in the present light of our knowledge, the question, can typhoid fever be prevented? must be answered unhesitatingly in the affirmative. The means whereby this can be done is ancient history, and comes down to us from Moses—ante-dating the Christian era—by more than fourteen hundred years.

Our modern method of accomplishment must differ, of course, from that of the Mosaic era, but the precept is the same. The observance of personal and domestic hygiene, the cleaning of the soil on which we reside, and the purification of our drinking water, this was the law unto the whole Jewish people—not alone to the dwellers in cities.

It would now be regarded simply as a statute of perfection and could not be enforced. To-day a sanitary cordon watches argus eyed, over our borders and seaports to keep out cholera, yellow fever and the plague. The large cities are spending thousands to complete their sanitary arrangements for preventing disease. In the meantime our rural districts are without any adequate protection, and that unwelcome guest, typhoid fever, is a not unfrequent visitor in nearly every country home.

"The essential factor in the wide-spread prevalence of typhoid fever in the country districts of the United States (says Osler) (1) is due to the absence of anything like efficient rural sanitation," yet God made the country and Man the town. Still we are confronted in this enlightened age with the strange fact, that the most healthful residence is not in the country, but in the town, where man is using modern sanitary measures to protect himself from infectious disease. Is there any evidence of this? Glance at an investigation recently made in Canada, (2) where, out of a thousand wells examined in the country districts, only two hundred and fifty were found unpolluted. Has typhoid fever been prevalent in the rural districts of North Carolina? Unfortunately there is no data from which to

1 Article in New York Sun, Jan. 27th, 1901.

2 Basemore, Sanitarian, Aug., 1900.

form a correct estimate, as the country doctor will not report to the health officer.

Personally, I believe it has been more prevalent in the Seaboard and Piedmont sections, in proportion to population, than in any of the larger cities, Philadelphia not excepted. Verily, we have been calling the disease by a variety of names, such as typho-malarial, continued fever, and continued malarial fever. Some have contended that there is a third form of fever, peculiar to the middle and Eastern part of the State. Many of us remember the paper by Dr. Hays (3), Chairman of the Section on Practice, in 1899; also Dr. Parrot's (4) paper for the annual debate at Tarboro last May. It is rather more than a coincidence, that both of these gentlemen selected for your consideration the same subject—'The Continued Fevers of North Carolina'—and that they both combated the idea of this third form. These papers furnished evidence not alone of the frequency of typhoid among us, but also of the firm hold this idea of a third form of fever had taken upon the minds of some of our physicians. Calling the disease, Weller like, by any name, except the true one, this fetish of a third form of fever and the non-reporting of cases to the health officer has not only made it impossible to form an estimate of the number of typhoid cases we have had, but it has also been most favorable to the spread of the disease. Does any one doubt that under this pernicious practice (no diagnosis made, no sanitary precautions taken), that we have had a very large number of cases among our rural population? Must not a vast number of nidi resulted from this practice, which will prove a fruitful source of infection in the future? I admit that there are oft-times diagnostic difficulties (especially to the country doctor in malarious sections), in determining the nature of fever. I know that many typical and very mild cases are seen. It is these mild cases, particularly the ambulant ones, that are the most dangerous. Thorne, (5) of Caterham, Eng., traced the origin of over 300 cases to one individual, who was not sick in bed,

3 Trans. N. C. State Society, 1899.
4 Trans. N. C. State Society, 1900.
5 Plunket, Sanitarian, July, 1900.

but a genuine walking case of typhoid fever. Sternberg (6) says: 'Typhoid fever among our troops in camp during the Spanish-American war was due to the very general failure on the part of any surgeons to recognize the disease in its milder forms and early stages.' 'Army surgeons correctly diagnosed, (says Reed (7) and others in their recent report), about one-half the cases of typhoid fever occurring in our army during the Spanish-American war, but in recognizing only one-half, they probably did better than the average physician throughout the country does in his private practice."

In this connection it is well to remember the advice of Osler, (8) "Learn to suspect typhoid, and not malaria, particularly if it resists quinine. Instead of the Anglo-Saxon method of procedure, which is to assume innocence until proven guilty, adopt the Gallac usage and consider every doubtful case as guilty, that is as typhoid fever, until the contrary be clearly demonstrated." This advice is most valuable and should be followed. I know how loath we are to assume the presence of anything so serious as typhoid fever. I know how reluctant we are to alarm the friends and family. It is our duty, however, in the doubtful case, to do this very thing, and to institute sanitary precautions at once. Should it prove not to be typhoid, no harm will have been done, and the family will have received a much needed lesson in practical sanitation. Returning to the prevalence of the disease in our rural districts, allow me to repeat, that while no data exist, on which to base an exact estimate, still its frequency in the past must be admitted. This is indicated both by such published evidence as we have, and the experience of nearly every practitioner in our Seaboard and Piedmont sections. The cause of said frequency has been due primarily to neglect of excreta disinfection, consequent upon faulty or late diagnoses, secondarily, open well infection and the common house fly.

Of late our knowledge of the infectivity of the excreta in typhoid fever has been enlarged by finding in a large proportion

6 Sanitary Lessons of the War, Am. Med. Association, June, 1899.

7 Reed, Vaughn and Shakespeare report to Surgeon, U. S., 1901.

8 Address before New York State Society, 1899.

of cases the bacillus typhosus in the urine. Thus M. W. Richardson, (9) in examining the urine of 66 patients in the early stages of convalescence from enteric fever, found the bacillus in 14. He had previously found it in the urine of 9 out of 38 examined in the acute stages of the disease. At present it is estimated that in about 25 per cent. of cases the bacillus is present in the urine. The evidence on this point is conclusive that the urine may remain infected for an indefinite length of time, the patient may be discharged as cured and go about his usual avocations, yet his bladder remains a perfect arsenal of typhoid bacilli.

Richardson (9) mentions an extreme case illustrating this. A man was admitted to the Johns Hopkins Hospital who 5 years before had an attack of typhoid fever, since when he had suffered with cystitis. From the urine of this patient a pure culture of the bacillus typhosus was obtained. This discovery of the infectiveness of the urine in the disease adds greatly to the possibility of its spread, and suggests, of course, careful examamination and disinfection of this excretion before the patient is discharged.

It has been found that urotropin given three times daily in ten grain doses will so disinfect the urine that bacillus of Eberth will be destroyed.

Of the various media whereby the bacillus may be conveyed to man, water as of old holds the first place, but the ubiquitous house fly is now known to be a close second. I shall only notice these two, as they are those which operate mostly for the spread of the disease in the rural districts.

The common house fly (Musca Domesticata), first came prominently into evidence as a carrier of typhoid bacilli during the Spanish-American war. They were then shown to be very active agents in infecting food and drink, where they first had access to undisinfected excreta. They can carry the bacillus in two ways, the fecal matter may adhere to the fly and be mechanically transported, or the fly having fed on typhoid excreta may carry the bacillus in his digestive organs and deposit it with his excrement, the so-called fly specks. We can now see they must

9 Journal Experimental Medicine, Vol. 4, No. 1, 1899.

have been from time immemorial much concerned in the spread of this disease where the privies were open, and both disinfection and removal of excreta neglected. Thus Dr. Boobbyer (10) has shown that in Nottington, Eng., enteric fever is more frequent among those having open privies or water closets.

An investigation made in Canada has already been mentioned, where out of a thousand wells examined in the farming districts, only 25 per cent. were found to contain pure water. We have no means of knowing the relative number of wells which have been infected in this State, as examination of suspected drinking water (except in rare instances) has been neglected.

When we consider, however, the continuous habitation of our rustic population in one place and their general disregard of filth accumulation; when we reflect upon the number of country houses in which there have been cases of typhoid, or possibly that third form of fever, with the undisinfected dejecta thrown out upon or buried in the soil, we must conclude that the number of infected wells in North Carolina has been very large.

Typhoid infection of wells in the country districts generally occur in one of three ways:

1. The excreta being thrown upon the surface above the drainage side of the well may be washed by rains directly into the well.

2. The undisinfected linen and bed clothing of the patient may be washed (as is frequently done in the country) in such close proximity to the well that some of the water from the tub will find its way directly into it.

3. The soil in the vicinity being infected by the excreta, the bacillus typhosus by some inherent power of its own, may penetrate through and thus reach the well. The power of this bacillus to penetrate soil is at present an unknown quantity. There is good reason, however, to believe that it has this faculty, other organisms having been shown to possess it in a high degree. Thus in an experiment conducted at Strassburg, Germany (11), in 1890, by digging two pits in the forest twenty-four feet apart,

10 Sanitarian, March, 1900.

11 Zeitschrift fur Hygiene, Vol. xxxi, 1899.

and placing in one the micrococcus prodigiosus and in the other the fluorescent vibrio, it was found that in one hour the micrococci, and in two hours the vibrios had passed through the twenty-four feet of gravelly soil into the opposite pit. Experiments made in Turin, Italy (12), in 1896, with reference to the filtering power of soil, furnished the same results as the one last mentioned. If we consider the longevity of the baccillus typhosus in polluted soil, and grant that it has the power of soil penetration, it then becomes very difficult to see how country wells escape infection, when typhoid excreta is placed in their vicinity.

Experiments by Martin, of London, Eng. (13), bearing upon the life history of the bacillus in soil are of interest. This observer found that while virgin soil was hostile to the bacillus, organically polluted soil was extremely favorable to its growth. In one particular experiment he found that it maintained its existence in polluted earth for 456 days, and near the end of that time, although dried and powdered to dust, was still viable and presumably virulent. From this we see it is probable that the soil (polluted as it is) in many villages and around country houses must be veritable hot-beds of typhoid bacilli. Its longevity in water has been shown to be very great. Wescott (14) states he was able to trace 19 cases to a certain well, which was then closed and the epidemic ceased; after remaining closed for twenty months it was reopened to obtain water for laundry purposes, and another case occurred. Reed, Vaughn, and Shakespeare (15), in report already referred to, state that the bacillus is not only capable of retaining its vitality and virulence for months after it is discharged from the body, but will also multiply in both soil and water; furthermore they say it has been found three months after death in the bodies of those who have died of the disease. This last statement has a very important bearing when it is remembered that there is a well or spring near every country church, and it is the custom in many sections to bury the dead in the church yard. From such evidence as

12 Zeitschrift fur Hygiene, Vol. xxxi, 1899.

13 Local Gov. Reports, London, Eng., 1898.

14 Reed, Vaughn and Shakespeare, Report to Surgeon-General, U. S., 1901.

15 Reed, Vaughn and Shakespeare, Report, 1901.

has been mentioned it is natural to suppose our country wells have been a prolific source of enteric fever in the past, and being specially liable to infection by typhoid bacilli, they must be regarded as a constant menace to health in the future. In the rural districts from the moment typhoid fever is diagnosed or suspected, the customary drinking water of the family should be placed under suspicion.

Pending an examination (which can now be made free of charge by applying to the Secretary State Board of Health) all water intended for drinking should be boiled. Should the bacteriological analysis show that the water is infected, the well should be filled up and another driven, or sunk at a safe distance from and above the drain side of the one destroyed. It is only fair to state before we leave the subject of water, that the old open well is being rapidly replaced in some sections by the pipe or driven well. These when properly sunk must be much less liable to infection.

No review of this subject would be of any practical use, which did not lay some stress on excreta disinfection. This is especially necessary at present, as the urine in the disease, like the water of Falstaff, has been shown to contain more things than we knew of, and is perhaps a more frequent source of infection than the solid excreta.

Not only is it all important to disinfect the excreta of typhoid fever patients, but the greatest care should be exercised in the disposal of human excreta generally, and *especially* in the ordinary privies of the village and country. It has been shown that immune individuals partaking either of food or water infected with typhoid bacilli may deposit the same in their normal stools, thereby innocently serving to infect the water supply or cause the disease to be distributed by flies. It should not be forgotten that the stools in this disease are often infectious before the subject shows any evidence of typhoid, and again, they may, like the urine, contain the bacillus sometime after convalescence (16). Given in the country proper care of privies, and diagnosis of the disease de novo, with ideal disinfection thereafter of the excreta

16 W. A. Park. The Bacteriology of Typhoid Fever, Medical News, Dec. 16, 1899.

(which alone causes bacillus typhosis infection), the disease could be eradicated. While it may be simply utopian to contemplate perfection, there is every reason why we should strive to improve our methods of diagnosis and disinfection, and *unremittingly urge upon our clientele the great importance of at least* exercising ordinary care in the disposal of human excreta.

The importance of this must be apparent when we remember it is estimated that annually, 300,000 people in the United States have typhoid fever and 50,000, die of it (17). I have not mentioned any special method of making the diagnosis, assuming that every physician when possible avails himself of the Widal test and blood examinations. As soon as the diagnosis is made, or if there is any reason to think we are dealing with typhoid, the patient's room should be barred against flies, with wire gauze, or mosquito netting which has the advantage of cheapness, and sticky paper should be kept in the room, in order to catch any flies who may enter. This should be burned after the flies are caught. A liquid disinfectant must be provided which is absolutely reliable. There are a number of substances which furnish in solution an efficient germicide for typhoid excreta. In some experiments conducted by Gwyn (18), the following were found effective. I shall append only his five minute table, believing it is proper to destroy the bacillus in the excreta as soon as possible.

To disinfect within five minutes, Gwyn gives the following:

A volume of infected urine would require—

1-2 its vol. of	1-20	Carbolic Acid	Sol.
2-3 " " "	1-40	" "	"
1-5 " " "	1-1000	Bichloride	Sol.
3-10 its vol.	10 per cent.	Formalin	Sol.
1-10 " "		Chlorinated Lime	"
2-5 " "		Liquid Chlorides.	

He states, I may mention in passing, that milk of lime which has been much used in the country districts, hardly deserves the name of a disinfectant.

17 Plunkett, Sanitarium, July, 1900.

18 Norman B. Gwyn, Disinfection of Typhoid Urines, Johns Hopkins Reports, Vol. VIII, page 394, 1900.

From the above table one may select at will the substance to be used as a liquid disinfectant. It is important, however, that whatever is employed should be accurately prepared and mixed with the excreta in sufficient volume. Personally, I prefer the bichloride or formalin solution, having no experience with the others. The latter possesses some advantages over the bichloride, being non-poisonous, non-corrosive and does not injure the most delicate fibrics. It is more expensive than the bichloride. The liquid and solid excreta should be disinfected in the same vessels in which they are received from the patient by mixing with the proper quantity of disinfectant solution and allowing them to stand for an hour before being emptied. When emptied they should be placed in a pit dug into the clay, at a safe distance from and below the drain side of the well. They should be carefully covered with lime and dry earth in order that they may be inaccessible to flies.

The soiled body linen, bedclothing, napkins and cloths used about the patient should be disinfected without delay before they are removed from the sick room. This may be done by soaking them for two hours in a vessel containing a sufficient quantity of the disinfecting solution, thereafter they may be removed with safety to the wash-tub.

This is important to prevent (among other things) infection of those having charge of the laundry. The writer remembers to have seen in one season seven cases of typhoid in washerwomen, who contracted the disease by handling infected linen.

If the bath treatment is used, some of the disinfecting solutions should be poured into the water after the patient is removed, more especially should he urinate, or have a fecal discharge while in the tub.

Tablets of bichloride may be kept for this purpose, but they corrode the tin tub; it is better to use undiluted formalin.

When emptied, the bath water should be carried to a safe distance and treated in the same manner as the excreta. The nurse should be carefully instructed as to her personal hygiene, and made to understand the danger she encounters when attending a case of typhoid fever.

Before the patient is discharged and before measures of disin-

fection are dispensed with, urotropin should be administered for several days in order to disinfect the urine within the bladder. Finally the sickroom must be cleansed and thoroughly treated with disinfectants, including all furniture, beds and bedding. All these things, and more we will do, if we would prevent the propagation of this infectious disease; *moreover we will have to keep them doing.* I know this is detail in the superlative and the subject is trite, aye more, it is stale, but in the language of the oft-quoted Osler, "its very staleness is warrant for repetition; the triteness makes earnest reiteration a necessity." Why, because thorough measures of disinfection in typhoid fever as instituted by the physician, particularly in our country districts, is not the rule, *it is the exception.* Very troublesome this sanitary business, it may be said, and not inclined to make one popular—admitted.

If one desires to have his instructions carried out, he must frequently lay aside his suaviter in modo, and play for them once the role of health officer. A very different personage, in manner at least, from the affable doctor.

When we are confronted with typhoid fever, not only should we go on a tour of inspection and order the removal of anything about the premises favorable to its spread, but then and there should commence to urge upon the family the importance of so living as to avoid this disease.

The layman is careless of theories. He must have practical demonstration. It is needful to do missionary sanitary work in our daily practice. The time is at hand when the family physician must share in the responsibility for the propagation of infectious disease. The time is at hand when he will be held responsible.

This is the morn of the 20th century, the sun of sanitary science is at last above the horizon, and like the glorious orb of day, is illuminating with its God-given rays the remotest corners of the earth.

The march of civilization has been broad, the march of preventive medicine will be broader. Shall we not fulfil the highest mission of our calling, and be as Moses unto this people, leading them out of the wilderness of uncleanliness, teaching them how to avoid disease?

Mr. President, let us again be pioneers, and enter individually and collectively upon a campaign of sanitary education among the people and solve this problem of typhoid fever in our rural districts.

DISCUSSION.

Dr. Knox.—I wish to express my thanks and the thanks of the Society for that most excellent paper.

Dr. R. H. Lewis.—I would like to cordially endorse that paper, and I wish to call the attention of the Society again to the offer of the State Board of Agriculture to make bacteriological examinations of water. In regard to disinfection, the law says it shall be the duty of the attending physician to see that the excreta is disinfected. Leaving out the law, it is apparent that it is the duty of the attending physician to do this. His first duty is to instruct the family as to how to prevent the spread of the disease. In sending a sample of water for bacteriological examination, it need not be large. Mr. McCarthy, whom I regard as a most competent bacteriologist, requires that the bottle in which water is sent be furnished by him that it may be sterile. He insists upon thorough asepsis. The doctor is not a man practicing simply to make money, but stands in the relationship of a trustee; the patient puts himself in the hands of his medical advisor not only to cure him, but to take care of him in every way.

Now, I want to call your attention again to the fact that it is within our easy reach to avail ourselves of the opportunity to have the bacteriological examinations made of the water.

Dr. J. P. Munroe.—In view of what Dr. Lewis has said I want to make just one remark: It strikes me that Dr. Lewis is a little disappointed that the members of the Society have not responded more generally to the opportunity offered us of having drinking water examined. Of course Dr. Lewis knows that typhoid fever has not been prevalent the last four months, but I think I can promise Dr. Lewis that Mr. McCarthy will be overwhelmed with samples of drinking water before very long.

Dr. Kent.—I must confess the more I hear of this discussion the more I feel discouraged about the prevention of typhoid fever. In the first place, it is a week to 10 days after the

patient has contracted typhoid fever before we have seen the patient. We know the germs of the disease have been spread broadcast by that time. The doctor has told us that our patients are spreading the disease weeks and months after we have dismissed them as patients.

Dr. Summerell.—Dr. Kent spoke of the fact that it was two or three weeks before we saw the patient, and the typhoid fever germs are scattered over the premises, and after our patient is dismissed; also there is another vehicle of distribution, and that is the domestic fowl. We can report instances where our domestic fowls have free access to the dejecta in the country. If the house fly disseminates typhoid fever, why does not the domestic fowl do the same? Why are they not scattered all over the premises and go at once to the source of our drinking water? Therefore, in trying to educate our country population it might be well to warn them to keep their privies free from access to domestic fowls and flies, and encourage the male population to use a closed privy.

Dr. R. H. Lewis.—Mr. President: I have never thought about chickens before as being dangerous. It is very interesting. One reason I am anxious for the physician to look after those things is that it educates the people.

Dr. Weaver.—I would like to ask Dr. Lewis if typhoid fever can be contracted in any other way than by eating or drinking?

Dr. R. H. Lewis.—There is some difference of opinion. I believe personally that it must be allowed. There are certain cases, however, that you can hardly explain unless you accept the ærial transmission theory.

Dr. Geo. W. Long.—I think it is an important matter for the Board of Health, sustained by the physicians of the State, to see that we have the best drainage possible. (Dr. Long also gave an interesting discussion of considerable length on the ejecta of vegetarians and fly eating races, and herbiverous and carniverous animals.)

Dr. H. W. Lewis.—What Dr. Kent says is possibly true, the more typhoid fever is investigated the more dangerous it is found to be. Because there is no care taken of the excreta does not relieve the physician, he is responsible after he is called. If he

treats typhoid fever with the treatment now in vogue he indulges in therapeutic nihilism, cold water and not much else, but he will be kept pretty busy in keeping the family cleaned up. To Dr. Summerell I would like to say, his idea about the domestic fowl is an excellent one and new to me. All the authorities I have been able to get at lay stress on excreta, excreta disposal, the privy is the thing to look after. As to dust, plenty of authorites tell you it can be carried by dust provided it is not thoroughly dried and there is wind enough to carry it. As to immunity, Dr. Vaughn states that the measure of immunity in typhoid fever is large, acquired and natural—between 60 and 70 per cent. That is based on his own experience, and his experience is very wide. He had charge of the camp at Jacksonville. The only point I wish to make in my paper is that I believe the time has come for us to take a sanitary position when we assume the position of the family physician.

The Need for Greater Care in Making Examinations and in Sending Patients to the State Hospitals.

By ISAAC M. TAYLOR, M. D., Assistant Physician State Hospital, Morganton, N. C.

The enactment of Chapter I, Public Laws of 1899, extended the work of the superintendents of health, as county physician to a set of duties of very great importance to the State hospitals for the insane.

In prescribing that persons thought to be insane must be examined by the county physicians without charge when application is made to them, it practically gives into their hands all these examinations and the law was drawn making these officially responsible that they might better inform themselves, and might furnish more accurate data in regard to the persons whom they have examined, than has heretofore been done.

The first and most important thing is the drawing and signature of the warrants and commitment; this is of course the duty of the clerk of the court, but a well informed physician with a knowledge of the law on the subject, and a common sense understanding of the reasons for that law, can do much in the way of

seeing that each blank is properly filled, that all affidavits are properly attested and that the signature and seal of the clerk is affixed to the commitment.

All these show that legal inquisition has been regularly held, that proper persons have, under oath, given testimony and that the right of the insane person to proceedings "by due process of law," and the right of society to protection from one whose enlargement is disadvantageous, if not dangerous to the community, have been respected.

Time after time papers must be returned because the legal forms have been carelessly executed and therefrom arise delays and misunderstanding. Then again they may do much toward a proper observance of the law by having the examinations made by the clerks instead of by magistrates, as is allowed under certain conditions. The examination of insane persons was put in the hands of the clerks of superior court for the purpose of having a law officer of intelligence, education and legal knowledge and to make sure that there was a record made of the proceedings, and it is best that the clerk should himself draw the papers.

After admission is obtained the medical examiner can benefit the insane persons by seeing that there is less show of force, that handcuffs and ropes are abandoned, the patient clean, free from vermin, properly clothed and alway impressed with the fact that he is going to a hospital, not a prison. If restraint is necessary, a strait jacket may be put on, or, as has once been used, a seamless sack with a hole cut for the head and sewed tightly about the body and arms makes a very efficient strait jacket. For those in the Western district, the hospital at Morganton would willingly send a model for making a long-sleeved, strong jacket.

A sufficient number of people to care for a patient should accompany him; because an officer is not afraid of a patient, or is strong enough to handle a patient alone, does not insure against bruises and rough handling, and for the sake of decency, good morals and avoidance of scandal, a woman should be of the party when a female patient is sent from a distant point, especially if a night must be spent on the journey,

The purely medical part of the examination more properly

concerns the Superintendent of Health, and this is written to beg them to answer fully the questions prescribed by law. These are not idle, but have been digested for years and only those essential to a knowledge of the case and a partial prognosis remain.

It is particularly needed that careful replies be made now, since those selected for admission into the hospitals must be taken from a large number of applications, and the probable prognosis must entirely govern in naming the few who are to be selected.

The name, age and color are usually stated positively and satisfactorily. The occupation of the patient we wish to know for statistical purposes. This question is very loosely answered, when the least attention would give definite, concise information. The mechanical trades, of course, are usually indicated, a laborer should be designated as to occupation, a blacksmith's helper, a farm laborer, a fireman, etc. It is particularly desirable that there be a distinction made between a farmer and a farm laborer, the answer farmer, is too indefinite often to properly classify. House-work, house-wife, are terms too comprehensive, meaning anything from a lady's maid to the wife of a ten-horse farmer. We should know when the person asked about is a cook, house-servant, daughter of a farmer, wife of a farmer, washerwoman, etc. The widest departure in this direction I now remember is the reply that the occupation of the patient was "wading in the creek and throwing rocks."

The questions requiring two answers are very generally inadequately replied to, for instance: Has patient manifested any tendency to injure himself or others? If so, in what way and how often? Is sometimes answered "yes," sometimes, "In various ways."

In what way is disease exhibited, is often answered, "In various ways." Has patient any family, if so what persons compose it? Age of youngest child? "Two months old."

There seems a general confusion as to what is meant by *an attack of insanity*, it is variously answered, some recognizing no period of apparent good mental health as a recovery, others classing each separate demonstration of excitement or epileptic seiz-

ure as a fresh attack of insanity. We mean by an attack of insanity, a period of continuous manifestation of mental disease with only transitory return to mental balance, the manifestations may not be continuously of the same character but may vary in type embracing a period of mania and then of melancholia, with a short term of quiet when there is apparent near approach to normal.

The investigation into the cause of an attack is apparently often very superficial, little questioning as to heredity or nervous manifestations in near relatives or forebears, or reference to long evidence of general break down with following mental and nervous symptom. If there is a religious element manifested in the symptoms the cause assigned is generally "Religious excitement," or if insane person is a school boy, "Masturbation" is the favorite assigned cause, or if there is delusional accusation of husband or wife, "Domestic trouble" is given.

We beg that our examining physicians look beyond the superficial appearances for physical defects, disease of organs, toxic causes from faulty elimination of excretions and the element of heredity which plays such an important part and which is so often concealed; heredity, meaning not simply that some relative has been insane, but there may, in one generation, be ill health, in the next intemperance, in the next insanity, epilepsy or other neuroses.

The question in regard to epilepsy is of the greatest importance in prognosis, and with the clear description in almost every text book on general medicine, it is remarkable how many blunder over this, classing hysterical convulsions as apoplectic, and the convulsions of infancy, so commonly a part of over-feeding and indigestion, as epileptic, with a general disregard of the less prominent and equally important "*petit mal.*"

There is apparently little difference in the minds of the general practitioners between delusions, hallucinations and illusions, these are most important, and the distinctions should be borne in mind.

For the benefit of those who do not have a clear knowledge of these terms, may I ask the indulgence of those who have, and quote here the definitions given by Dr. Blandford?

"A delusion is a false belief in some fact which generally speaking, personally concerns the patient, of the falsity of which he cannot be persuaded either by his own knowledge and experience, by the evidence of his senses or by the demonstration and declaration of others.

Hallucinations are false perceptions of the senses, the eye, the ear, the nose and so on. The hallucinated patient thinks he sees in the blackest darkness or hears a voice through any number of thick walls, whereas his seeing or hearing is entirely subjective, taking place altogether within his own head, without any excitation conveyed to his organs from the outer world, when in fact, he would hear and see the same were he deaf or blind.

An illusion is also a false perception of the senses or rather mistaken perceptions. There is something to hear; but that which the patient thinks he sees is not the real thing, but something else."

Illusions and hallucinations are common manifestations of insanity and it is important in prognosis to distinguish between the two, particularily with regard to hallucinations of sight and hearing, the latter evidencing more extensive organic disease of the brain are found most often in chronic cases. Delusions are most important symptoms of mental diseases and investigation should be directed to ascertain if the delusions are systematized or of varying character. Delusions are not always spoken about, the attitude, habits and manner of patients often indicate the existence of delusions when a reference to them would cause a suspicious patient to deny and conceal any he may have.

The tendency of an insane person to violence should be fully looked into and the questions in the application fully answered, as the hospital officers, for the protection of the patients and for the prevention of accidents, should know from the first, what must be guarded against.

The questions as to mental and nervous disease in ancestors or kinsmen, should be answered fully, it is only through the family physicians and the people at home that correct information of this kind can be obtained, and while many conceal these

facts, a word of explanation may bring out what cannot be otherwise ascertained.

The general physical condition has a direct bearing on the prognosis, and it is especially desirable to know of the existence of contagious disease, cancer and tuberculosis, and it is important to know if a patient is to come from home, or from county home or jail.

These observations may seem trivial and useless to those unacquainted with the average manner of answering the questions which the law prescribes, and too, the fault does not lie with the back woods members of the profession, many of our best practitioners regard the questions as formal and content themselves with answering them in the most terse way, concealing the facts for the sake of brevity in the answers. The best descriptions often come from uneducated persons as we sometimes found under the law recently repealed, that the committing magistrate whose composition was faulty and spelling worse, gave a more comprehensive description of a case than the medical witness who testified before him.

In conclusion let me beg that those who have honored this with their attention, will apply it when next called to a case of this kind and will help our efforts to perfect and simplify the medical examinations and the legal processes.

The Physician as a Sanitarian.

By DAVID A. STANTON, M. D., High Point, N. C.

If Moses, while journeying through the wilderness recognized the importance of observing certain sanitary laws, where ought we of the twentieth century to be? Instead of having attained a degree of perfection along this line, I ask, where are we? The answer is still, in the wilderness as compared with where we ought to be. Yet during the last decade the researches along biological lines has greatly broadened the field of preventative medicine. The microscope and the culture-tube have been the scouts and sentries in the warfare against disease, until we are beginning to see preventative medicine grow in interest, and the people are demanding the service of sanitarians as never before.

Dr. Henry Baker, of Michigan, has well said: "Eminent men in the medical profession have prophesied that in the future the duties and labors of physicians, finally, will become more largely preventive than curative of disease. While this may prove to be true, it would seem to be more in harmony with the general laws of progress that there should first occur a division of labor —a separation of the profession into specialties, one being devoted to preventive and the other portions to the several branches of curative treatment. It seems to be admitted, however, that a broad culture in all the medical sciences supplies a good basis for the training of a specialist in any branch of medical practice, and preventative measures are expected to apply to any disease treated by any specialist.

The general good of mankind, therefore, calls for an interest in, and some knowledge of, sanitary science, and its practical application in public health work on the part of every physician.

The ideal physician, therefore, is an ardent sanitarian employing the various prophylactic measures known to modern science, and through his precepts and practice along sanitary lines will lessen disease and thereby reduce his patronage, he seeks no equivocal course in his life-saving effort. His is the only profession which is continually legislating against his pecuniary interest. The intelligent patrons of any physician make frequent, and sometimes urgent, demands upon his services as a sanitarian.

He rises to professional success as a school-master, teaching and training his patrons in the prevention of diseases. He is not always called because of the potency of his pills and powders, but often to give advice upon the many subjects of preventative medicine.

It may be concerning the clothing of the infant, or the question of bathing, of feeding of ventilation, of isolation, of immunization, or of disinfection; of these and many kindred subjects he speaks among his people as one with authority.

As an educated physician he should know, and as a conscientious one he should practice these precepts, for the good, not only, of his own patrons, but of the community of which he forms a part.

The medicine of the present period tends more and more toward the direction of prevention; and if the physician proposes to keep himself abreast of the times, it is imperative that he be in touch with the advance along these lines.

For the physician, who is a sanitarian, the hygiene of infection is a subject of inexhaustible interest. The cause of infection, its geographical distribution, modes of dissemination, portals of infection, and prophylaxis. These, and other phases of the subject afford him food for thought. In time perhaps he has joined the army of scientific writers, and the result of his research is written in the great book of sanitary science.

The physician who is a sanitarian is rarely if ever a factor in the spread of contagion. His instincts and training lead him to studiously avoid the possibility of his becoming an agent in the transmission of diseases.

But what shall we say, on the other hand, concerning the physician who takes but little if any interest in sanitary science?

I scarcely need remind you that a great many physicians are criminally indifferent after visiting contagion, taking no precaution in change of clothing or personal disinfection. The fever thermometer, that common carrier of disease, is transferred from mouth to mouth without disinfection, and other instruments are frequently used in the same criminal manner.

The question is sometimes asked: "Should a physician refuse obstetrical calls within twenty-four hours after attending smallpox, scarlet fever, erysipelas, diphtheria and measles?"

The answer to this question has not materially changed since Dr. O. W. Holmes wrote his essay on the "contagiousness of puerperal fever."

Let no physician be lulled into a sense of false security by resorting to moderate precaution under such conditions should necessity call him to the puerperal bedside.

The personal preparation of the physician at such a time should be more thorough if possible than that of the most painstaking laporotomist before operating.

Without a knowledge of bacterial origin but by clinical evidence alone, Dr. Holmes proved conclusively the infectious nature of puerperal fever. Yet now, after more than fifty years

have elapsed with the side lights of bacteriology and microscopy thrown upon puerperal fever, there are physicians who recklessly pass from cases of contagion to midwifery. To such practitioners the words of Dr. Holmes apply. It may be that offense or disease will come, but woe unto him through whom they come if we catch him in the voluntary or careless act of bringing them.

Whatever independence may be granted to those who have heretofore been the ignorant cause of so much misery, the time has come when the existence of a private pestilence in the sphere of a single physician should be looked upon, not as a misfortune, but as a crime.

During the past two years a mild form of small-pox has appeared in various parts of the United States. The attitude of some physicians toward the disease reflects no credit upon the profession. While the ignorant or indifferent or obstinate physician refused to accept the diagnosis of smallpox, the infection spread, and life was endangered, and business interests were disturbed.

In my own town we had a clear demonstration of what one careless physician can do. Either for popularity or lack of better discretion he sided with the laity when compulsory vaccination was ordered. The result was, the first case of smallpox this physician saw, died in the congestive stage, and was called brain fever; the second was called chicken-pox, and was allowed to go at large until he had spread the disease, and the city had the unpleasant experience of stamping out an epidemic of that loathsome disease at the cost of some thousands of dollars. Just the opposite was seen a few years ago when scarlet fever made its appearance; the wisdom and advantage of precaution were forcibly demonstrated. One of the local physicians was called to see a sick child, and found a well developed case of scarlet fever; a rigid quarantine was enforced, disinfection practiced, and the disease was confined to that one house.

It is sometimes charged that health boards are becoming more and more autocratic, even to an offensive degree, and that physicians and citizens frequently suffer injustice because of their imperialistic methods. Rarely can this charge be sustained.

The health officer who seeks the greatest good to the greatest number will cause some hardship to the few, in the discharge of his duty.

It is true that the power of the health-officer should be wisely used. His training should not cease with a thorough knowledge of sanitary science. He should be gifted with discretion, yet withal be firm. There should exist between the health-officer and his brother physician a spirit of friendliness, of education, and the merging of all sectarianism in the fact of their common mission, under the holy name of physician.

In conclusion I wish to call your attention briefly to our public schools. The physician who is a sanitarian is deeply interested in the school life of the child. It is a lamentable fact that the school buildings of today, with few exceptions, are insanitary.

In heating, lighting, seating and ventilation, health rules are generally ignored, and the helpless child is compelled to submit to cruelties for six hours in the day for months that a man would not endure for an hour.

When there is more attention given this phase of sanitary science, there will be fewer cases of tuberculosis among children, fewer cases for the specialist in diseases of the eye and ear, and fewer undeveloped young females for the gynecologist.

MINUTES.

DURHAM, N. C., May 21st, 1901.

The forty-eighth annual meeting was called to order at 11 a. m. by A. G. Carr of Durham, chairman of the committee of arrangements. Rev. W. L. Cunninggim opened the session with prayer.

Prof. Jerome Dowd, of Trinity College, delivered the address of welcome as follows:

Gentlemen of the North Carolina Medical Society:

Since Durham has grown from a small village to a large city many strangers knock at her gates to partake of her hospitality. Some of them come in pairs, some in troups, some in large bodies like Methodist preachers and doctors. Within the last year we have been honored by a visit from the Knights of Pythias, the Elks, the Junior Order of Mechanics, the Undertakers, and by the way, I have been told that the undertakers cover up many of your mistakes. We have had John Robinsons show, the Harvard baseball club and a dog show. In addition to these several expert opticians and patent medicine men have dropped in upon us and I have observed that some of these play beautifully upon the banjo. Then Dr. Lee the hypnotist and Madam Ami the celebrated fortune teller. Some of these strangers do us and some of them are done by us. In the present case gentlemen we know that you will do us—only good, and consequently we will open the gates of the city wider than common and offer you the freedom of the city. To be sure we shall treat you well. We dare not do otherwise. We are always very careful what we do or say to physicians. We feel somewhat toward them like the deacon did toward the devil. A young preacher come to town and preached on the devil. He denounced old Nick in the loudest language for about an hour and a half as the author and finisher of all mischief in the world. The old deacon came up to him after the sermon and said to him, are you not afraid to talk about the devil in that way? I tell you we can't be

too careful about the devil, says the old deacon, we do not know whose hands we are going to fall into.

There are no workers in the world who have done so much for the welfare of this century and generation as the physicians and surgeons.

At the close of the 18th century medical science was purely theoretical. The theory prevailed that all disease was caused by humors, and this theory gave way to another which held that all disorders and abnormalities were caused by the nervous system. Strange to say, this theory is still believed in by some men of enlightenment. For instance, "Dr." Caldwell of the Charlotte Observer holds that the reason a rabbit wobbles his nose is because of his nervous system. Dr. Brown advanced the theory that diseases were either sthenic or asthenic. This theory is still believed by a great many people, they believe that nearly all diseases are sthenic and require a stimulant.

Early in the 19th century medical science drew away from the study of theory to the study of life, to the study of anatomy, physiology, pathology, clinics, the laboratory and hospital and with the discovery of bacteria there were accomplished such miracles in medicine and surgery as the world never dreamed of. Within the last five years many diseases have been banished from civilization and every disease except one has been diminished or rendered less dangerous; that one I believe is spring fever. Cholera, yellow fever, leprosy, the plague, have been successfully excluded from all civilized countries. Typhus fever, which was at one time a scourge in every city, is now seldom named among the causes of death. The mortality of nearly every disease has been greatly reduced. Smallpox which at one time carried away more people than consumption is now unknown in well governed countries, and lastly that worst of human plagues, consumption, which annually kills about 120,000 people in the United States, is yielding to the practitioner and sanitarian, and the remedy is already known, which if properly carried out, will drive that disease from existence. If half the progress had been made in the science of government, of cities and States that has been made in medicine in the last 50 years, there would not be a case of smallpox in the State of North Carolina to-day. In surgery

the discovery of anæsthesia and the development of antiseptics has resulted in the extirpation of many fatal maladies and the death rates from all operations, including those of more serious nature scarcely exceeds 50 per cent. Sir Spencer Wells in his first 1000 cases of ovariotomy saved 20,000 years of human life. One of the best types of christian character portrayed in literature in modern times is that of the country physician, who was so hard worked that he had little time for theology and less time for Sunday school and prayer meeting. All true religion is work and all true work is worship. The cathedral in which the physician worships is as wide as humanity, its dome reaches up to the heavens.

In the name of those who in the hour of affliction have lifted up hands weak and trembling, now thankfully restored to life and health and vigor, and in the name of all of us who shall some day listen to the tread of your foot and look yearningly into your face, we now give you a warm grasp and bid you all a mighty good day and a mighty good welcome.

Response by Dr. Hubert A. Royster, Raleigh:

Mr. President, Ladies and Gentlemen:

Whenever called upon to make a speech, I am in the habit of beginning it with a certain anecdote. It runs something like this: A Philadelphia politician was invited to go to Chicago to make an after dinner speech. He went, spoke an hour and returned. When asked by his wife as to his success he said, "I did eloquent, the best thing I ever did in my life. When I sat down they told me it was the best thing I ever did in my life." I hope I will be spared this fate. I am going to make a humorous speech because it is short. Doctors are no great speech makers. I am sure there's a few things in the world I can do, and I am certain that speech making is not one of them. General Grant said there were two tunes he knew: one was Yankee Doodle and the other was not. I will not tell you the things I can do for fear I would weary you. A country doctor also said there were two classes of skin diseases; one that zinc ointment would cure and one that it would not cure. In making a speech I hold to the maxim of Lord Fox—jump into

the middle of a sentence and trust to providence to jump out. I wish that I had the eloquent tongue to respond to this address of welcome which was full of hospitality as well as an insight into the medical profession which a layman rarely gets. But I am no orator as Brutus. I wish that I had the tongue of men and angels or the sounding brass that is so necessary for an orator but I do not possess it.

I can heartily respond to this welcome that we have received. I am proud to be the representative on this occasion of the North Carolina Medical Society. I take it as a particular honor that I was chosen because I come from the city of Raleigh which is a neighbor of Durham and I congratulate myself for personal reasons that I have been chosen because I know a great many of the good people of Durham. As a representative of the Medical Society, gentlemen of Durham, I can assure you that your hospitality and kind treatment in the way in which it is given, in a generous open heartedness and freedom with which Durham lavishes everything which she has, is heartily appreciated. I certainly can say for the State Medical Society we are glad to be in your midst and to accept all, and that is a great deal, which you give. As a citizen of Raleigh I am glad to say I feel at home in Durham. There has always been a sort of friendly rivalry between the two cities which only goes to show that Durham has outstriped us because Durham is younger, and there is a saying in Durham that Raleigh is not the proper name for our city, it ought to be called East Durham. Personally I may say I am extremely glad to be in Durham again. I have been here for business and for pleasure—to see the base-ball games, to see the people of Durham, and I have been here to see her beautiful young ladies, last and not least. I can assure you that we accept your hospitality in unmeasured terms and will enjoy it to the fullest extent.

The President then declared the society open for business.

The roll was called and the President delivered his address.

The following committees were appointed:

Credentials.—A. G. Carr, R. H. Lewis, J. A. Burroughs, H. T. Bass and F. H. Russell.

Finance.—C. M. Poole, A. S. Anderson, N. P. Boddie, I. M. Taylor and T. P. Wynn.

Pittman Prize.—R. S. Young, Jno. M. Manning and E. G. Moore.

President's Message.—Geo. W. Long, H. W. Lewis, W. H. Harrell, A. Cheatham and B. K. Hays.

Dr. H. T. Bass read a paper on "Antitoxins and Animal Extracts." Discussed by Drs. J. A. Burroughs, R. S. Young, H. W. Lewis, G. W. Long, Chas. B. McAnally, I. M. Taylor, F. H. Russell and R. H. Lewis.

A paper on "Pneumonia and its Treatment," was read by Dr. Jno. C. Rodman, and discussed by R. H. Lewis, H. W. Lewis, R. H. Whitehead, Chas. B. McAnally, A. A. Kent, N. B. Herring, G. T. Sikes, J. F. Miller, H. T. Bass, R. J. Gill and B. F. Halsley.

The Society then adjourned until 3:30.

AFTERNOON.

Society was called to order at 3:30.

Dr. H. B. Weaver read a paper on "Tuberculosis" which was discussed by Drs. J. A. Burroughs, H. T. Bass and H. W. Lewis.

A paper on a "Few Great Men in the History of Medicine" was read by J. Edwin Kerr, and was discussed by Dr. B. K Hays.

Dr. J. E. Stokes read a paper on the "Importance of an Early Definite Diagnosis of Appendicitis." It was discussed by Drs. Royster, McAnally, Merriwether, Long, Kent, Herring and Weaver.

On motion of Dr. Kent, a vote of thanks was tendered Dr. Stokes for the very interesting and instructive paper.

Dr. W. B. Pritchard read a paper on "The Limitations of Surgery in the Treatment of Nervous and Mental Diseases." The paper was discussed by Dr. I. M. Taylor.

The society then adjourned until 10 A. M.

MORNING.

Society called to order at 10 A. M.

The special order of the hour was called up and without discussion the official organ of the society was abolished.

Dr. F. H. Russell made a report on Obstetrics.

The President appointed the following committee on nominations:

L. J. Picot, A. Cheatham, Chas. O'H. Laughinghouse and Geo. G. Thomas.

Dr. Hubert A. Royster reported two interesting surgical cases.

Dr. A. W. Knox reported two interesting surgical cases and they were discussed by Dr. I. N. Carr.

The Board of Censors made a report but after discussion it was referred back to the Board for further consideration.

The conjoint meeting with the State board of health was then held.

AFTERNOON.

Society called to order at 3:30.

The Obituary Committee made the following report:

CHARLES JAMES O'HAGAN, M. D.

"Le Roi est mort! The king is dead!" I have no doubt that thought came into the minds of most of us when we heard that Dr. O'Hagan was dead. Yet none of us desire to say "Vive le Roi!" His place in the affection and esteem of his friends and companions was unique and transcendent; it cannot be filled. And every man's heart is sorrowful at his absence from this convention.

In intellect he was a giant. His great mind was stored with the learning of the centuries and he never mistook the dross for the gold. His wit was sparkling, his sarcasm was pungent and piquant, his invective was terrible. He loved the ancient classics with their prodigal imagery and their close relationship to nature. He loved the rythmic swing of Horace, the flowing rhetoric of Cicero and the stately sweep of Homer. He loved the all embracing Shakespeare, the simple melody of Goldsmith, the stinging wit of Sheridan and the intense humanity of Burns. He loved them because he understood them and was akin to them—the divine kinship of genius.

Perhaps the most remarkable trait in his character was his supreme and unbending honesty. He was honest in thought and word and deed. He did not know how to frame his lips to

speak a lie or how to distort his body to act one. His life was an open book; all the world might read it and know his every thought and deed. "*Mens sibi conscia recti*" was the one rule and standard of his life. He was never influenced in his speech or conduct by the hope of reward or fear of punishment. He hated iniquity and he loved righteousness for righteousness' sake, but not the righteousness of the Pharisees and hypocrites. For deceit and treachery, whether spoken or acted, wherever he found it, in social life, in politics or in religion, he had only unconcealed loathing and contempt. He was ever ready and bold to defend the right though the heavens fell and he never stopped to count the odds. Conscious of his own integrity and the grandeur of his own white soul, the spectre of fear never came before his eyes, and not once in all his long and useful and glorious life did he ever to any man

"*Bend the pregnant hinges of the knee*
That thrift might follow fawning."

And oh, the tenderness of his great, noble, human heart, his unselfish and unceasing devotion to his friends and his countless charities and kindnesses, wherein not even his left hand knew what his right hand did! His very presence was a benediction; his life one long benefaction.

Life is a narrow lighted space between two boundless and utter darknesses. We emerge from the one and after a little time in the light we are engulfed in the other, and no man can tell whence we came or whither we go. It is the greatest of all mysteries, the mystery of the Infinite, which the finite human mind shall never grasp or understand. We see our loved ones diappear into the darkness of the unknown and we are helpless; we can do nought but shed our unavailing tears and beat on the black, unyielding wall, till we turn away with bleeding hands and quivering lips and broken hearts, for no answer cometh. We cannot penetrate the darkness, we cannot even hear the echo of our own shrieks; we cannot comprehend the Infinite. Job, the inspired prophet, poet and philosopher, cried aloud in his supreme agony,"

"If a man die, shall he live again?"

Dr. O'Hagan loved his profession, the greatest of all professions, and the only one which is continually striving to terminate the necessity for its own existence. And he died as he had always wished to die, suddenly and painlessly, and in the complete plenitude of his wonderful powers. Just a few weeks before his death, standing in his favorite attitude before the fire in his home, he quoted to me very pathetically this passage from Thackeray, about the death of Colonel Newcome:

"At the usual evening hour the Chapel bell began to toll and Thomas Newcome's hand outside the bed feebly beat a time. And just as the last bell struck, a peculiar, sweet smile shone over his face, and he lifted up his head a little and quickly said 'Adsum,' and fell back. It was the word we used at school when names were called; and lo, he, whose heart was as that of a little child had answered to his name and stood in the presence of The Master."

Was that a presentiment of what was then so near him? I do not know, neither can any one tell. It belongs to the Infinite, but this I *do* know, as I know that God reigns and judges men with unfailing justice, that wherever he went when he was swallowed up in the darkness of the further wall, whether it was in Paradise or in Nirvana, or in the Euthanasia he so dearly loved to talk about, or in the shining halls of the Valhalla—when the roll of the immortals was called and the name of Charles James O'Hagan was pronounced, he arose and with that quiet dignity, that gentle grace, that superb poise of his royal head and a "Heart as that of a little child," he looked full in the face of his Lord and Master and answered, "Adsum."

B. F. Rodgers.

Mr. President and Gentlemen:

I cannot refrain, sir, from adding a few words on behalf of myself, individually; I enjoyed the honor of the acquaintaince and friendship of Dr. O'Hagan during the last 20 years of his life, and therefore claim the privilege of paying a tribute to this noble man, as I knew and apprehended him. I am sorry, Mr. President, that I am unable to pronounce a fitting eulogy upon the life and achievements of this truly great physician and good man. This duty belongs to an abler tongue than mine, and to opportunities more ample than I possess. The whole country

accorded to him while living, the praise of genius and the still higher praise of consecrating that noble and beneficent genius to suffering humanity.

I probably knew as much of Dr. O'Hagan's personal and professional history as any man of my age now living.

He was not only a mnn of genius, but was a lovable man, full of personal magnetism, full of sparkling wit and humor, full of kind and tender instincts, alive to the romance that redeem life from commonplace and routine, and abounding in those high impulses which make their subjects benefactors, because they are enthusiasts in the pursuit of truth.

No man could be an hour with him and not feel the simplicity and fervor of his nature—the straightforwardness of purpose and intent which went into all his intercourse with others.

For nearly a half century he pursued his profession with energy and devotion, which were inspiring to himself as they were beneficial to medical science, and the welfare of humanity. The selfishness of renown had no charm for him. Distinction he valued as every high-minded professional man values it, for its influence and intended usefulness.

The friendship and affection which valued his exalted worth and appreciated the beauty of his life, would not shadow his claims to the admiration and gratitude of the world by exagerating them, or by saying he possessed none of the weaknesses common to human nature. He no doubt had his share of these.

It is known to his friends that he was sometimes fretful, impatient and intolerant about minor matters, or little crosses, and when vexed or angered did not usually attempt to conceal his displeasure. I do not refer to these things as faults, for they like his other traits but go to prove that he was a man without guile or deceit, too honest to dissemble, too noble to disguise. It was evidently through his superlative qualities of character and heart and rare grace of manner combined with his irresistable personal presence that he won the exceptional popularity he everywhere enjoyed among men and women. Not only in the higher circles of society, but in the humble walks of life. A prominent and beautiful feature of his character was the kind and sympathetic interest he always manifested in the younger members of the profession.

Although he had attained the period alloted to man, of three score years and ten, we deplore his loss, because we believe that the light of his genius had not grown dim with years.

Pardon me, gentlemen, for a little personal allusion to myself, connected with Dr. O'Hagan. From the time I began the practice of medicine up to the period of his death, he was my warm and devoted friend, and I loved him as a father. He was open and confiding to his friends. I was proud of his confidence and affection, and gave him in return the full measure of my own. I look back now upon my association with him as one of the providences of my life, and his death as one of the bitterest afflictions.

D. T. TAYLOE.

DISCUSSION.

Dr. J. Allison Hodges.—I want to make a motion that the paper of Dr. Tayloe be incorporated with others and referred to the Committee on Publication. It gives me pleasure few of you can appreciate, to have heard the tributes that have been paid to the memory of Dr. O'Hagan to-day. Never has this body met that my heart has not gone out to my friends in North Carolina, and I have never failed to remember the name of Chas. J. O'Hagan; and when I come here to-day I confess that part of my mission was to pay a simple tribute to the man who welcomed me to this Association. This meeting has been saddened to me by the absence of that distinguished man of letters and of medicine from among us. Some time ago at the Virginia Medical Association it was my privilege to make a motion that has since been carried out, that the name of a colleague of his and the memory of a colleague of his should be perpetuated in brass, one who stood high in the circle of professional education and professional attainments, and I feel it is a great pleasure to me to-day to say that we ought to do something to perpetuate the memory of this man in North Carolina, who to my mind, was the equal of any man I have met in medicine in recent years. It is our duty as men who love our State and profession to do something to perpetuate the name of such a man. I do hope that some of the friends of Dr. O'Hagan can show a tithe of that undying love that we felt for him, and we can perpetuate in some way the name of the man who was an honor to the South and to the profession.

Dr. R. H. Lewis.—In response to what Dr. Hodges has said I rise to call attention to the fact that it has already been proposed to have an oil portrait of Dr. O'Hagan presented to the State library.

Charles James O'Hagan, M. D.

The medical fraternity of North Carolina as well as the general public have sustained a loss in the death of Dr. Charles James O'Hagan, which is deeply deplored.

The summons came suddenly, December 18th, 1900, as he was preparing to take his usual night's rest. There was a slight struggle, and all was over. It would seem that "God's finger touched him, and he slept." He who had so often and so tenderly ministered to the sick and suffering was mercifully spared a long and painful illness.

Dr. O'Hagan was born in Belfast, Ireland, in 1821, receiving his early education there; a part of his early life being spent in England and Scotland. He was, however, quite a young man when he determined to seek fame and fortune in the new world across the sea. Landing in New York with a small amount of this world's goods, he possessed what was better far than riches, a strong character, the perfect integrity of which gained him the confidence and respect of all classes; a fine intellect which he trained and cultivated until he became the elegant, polished man of letters and of science; he was also endowed with a keen wit which could become trenchant sarcasm, but was held in check by ready humor and genial disposition; possessing splendid health and a handsome appearance, he was a man among men; a friend whose friendship was real, and much to be desired; a companion whose brilliant conversation could make dull hours speed gaily on, and in consequence his society was sought and greatly enjoyed by both men and women, for to the gentle sex he was ever a courteous gentleman of the old school.

The State has cause to cherish the memory of the man who adopted her in his youth, being led by a kindly destiny to her borders; first teaching school in the towns of Kinston, Hookerton and Greenville, where he finally located after taking up the study of medicine, and graduating with high honors from

the Medical College of the University of New York. He was facile princeps in his profession, being regarded as a great physicial and surgeon whose splendid ability and quick discernment gave him a fine reputation, his advice being freqnently sought by his professional brethren in difficult or unusual cases. His practice, therefore, was not confined to Greenville and its vicinity, for he had patients all over the State, and he was universally beloved by them.

He was a distinguished surgeon in the Confederate army, having enlisted in Gen. Matt Ransom's Brigade, and he served the entire four years, sharing the dangers and privations of his comrades with conspicuous courage and bravery; ever at his post, healing the sick and wounded, or comforting, as far as possible, the brave fellows who lay dying beyond the reach of earthly skill.

If ever a history of the deeds of the Confederate surgeon is penned, the devotion and self sacrifice of Dr. O'Hagan should claim a part

> "——— of the stories of valor,
> The legends that pass not away,
> Filling hearts and memories, and clinging
> Like incense of years to the Gray."

Professional honors fell thick upon him, and had he been led by ambition alone, he doubtless would have been the recipient of political honors as well, but his greatest and most enduring fame is the record he has left of devotion to duty and love to his fellow man.

Coming to us unknown, with none to lend a helping hand, he has placed his name high in the annals of the great and good men of North Carolina, leaving thus a rich heritage for his descendants as well as his professional followers.

> O joy; that in our embers
> Is something that doth live;
> That Nature yet remembers
> What was so fugitive!

W. T. Cheatham, M. D.

Dr. William T. Cheatham, son of Isham and Jennie Wood Cheatham, was born in Granville county, N. C., April 29, 1832,

and peacefully departed this life at his home, in Henderson, June 23, 1900.

He received only an academic education. But, notwithstanding this, with a vigorous intellect, sharpened and polished by his own efforts and application, he stood easily abreast with the men of his day in the front ranks.

In 1856 he graduated in medicine from the Virginia Medical College. From that time to the day of his death he was a most able, faithful and successful physician. He loved his profession, and gave his life to it with a strength of devotion that is rarely equaled. He did a great deal of charity practice. He ministered to the suffering of hundreds of poor families without remuneration.

His wish, often expressed to his family, was that he might die "in the harness." God granted his desire, giving him strength to visit his patients up to within a few hours of his death. He had more than a local reputation as a physician. His brethren abroad recognized and honored his high character and ability. He filled with marked ability many positions of honor and distinction in his profession. He contributed several valuable articles to some of the leading medical journals which attracted wide attention among the profession. He was once Vice-President of the Pan-American Medical Congress, a member of the American Medical Association, and of the New York Medico-Legal Society. Ten years ago he was elected President of the State Medical Society, which position he filled in a most acceptable manner.

He was an able and faithful physician, a devoted husband, a kind father, a true friend, an ardent patriot, and above all a sincere and earnest Christian.

Geo. L. Kirby, M. D.

Dr. Geo. L. Kirby was born in the County of Sampson, near Clinton, July 11, 1843, and died of pneumonia at the State Hospital, at Raleigh, February, 1901. He was educated at Clinton High School and acquired the knowledge of civil engineering, and assisted in the survey of the Florida Railway, also the Wilmington, Charlotte and Rutherfordton Railway. After this

he began preparation for his life work, the practice of medicine, and graduated at the Long Island Hospital College in Brooklyn, New York, with the degree of M. D., in the Spring of 1860. He very soon thereafter went abroad, and in a medical college of Paris engaged in the futher prosecution of his medical studies, that he might be more thoroughly prepared for his professional work. He returned to the United States much earlier than he had anticipated in consequence of the war between the States, and reached New York the day the City of Charleston was fired upon. Moved by the patriotic ardor that possessed so many of the young men of the South, he at once offered his services to the defense of the South, and entered the Confederate service at first as assistant surgeon of the Second North Carolina Regiment, and was afterwards promoted to the rank of surgeon of said regiment. In an engagement with the Federal army at Kelley's Ford, Virginia, he was captured and soon after his release was assigned to duty at Wytheville, Virginia, in charge of the Confederate Hospital. In July, 1865, Dr. Kirby moved to Goldsboro, and at once began the practice of medicine.

In June, 1866, he was happily married to Miss Mary Greene, of Goldsboro, who for nearly thirty-five years was truly a helpmeet to her husband, and during all these years scattered in his home and along his pathway as much sunshine as falls to the lot of men.

To this union of heart and hand were born 10 children, 8 of whom survive, and all of whom were present at his death. After a very laborious and successful practice at Goldsboro, extending through a term of years reaching from 1865 to 1894 he was called to the superintendency of the State hospital at Raleigh, where death put an end to his honorable and useful life, consecrated to the relief of suffering humanity.

Dr. Kirby was a member of the State Medical Society, having joined at Raleigh in 1867, and for six years was a member of the State Examining Board. Such in brief are the salient points in the history of a distinguished member of this Society—one who, in peace and in war, as a private practitioner of medicine and as superintendent of an hospital for the insane of our state, for forty years dignified and made honorable his high calling.

Probably no man now living knew the subject of this memoir better than the writer. For a quarter of a century we practiced medicine in the same city, and a number of years were in copartnership, and full opportunity was thus afforded to form a proper estimate of his character as a man and his abilities as a physician. Dr. Kirby was a modest man, quiet in manner and entirely free from ostentation, and in assemblies of his brethren made no effort to impress his personality or his knowledge of medicine, and rarely engaged in public discussions. But he was a man of more than ordinary ability, and was possessed to an unusual degree of that highest and best faculty of the brain which we commonly call judgment. Though quiet in manner, he was fired by a laudable ambition to succeed in all his undertakings, and was a very laborious, intelligent, and successful practitioner of medicine. I believe there are or have been few of our number whose lives measured up to his in fullness and laboriousness of continued endeavor in behalf of the afflicted. At the age of sixty he laid aside the labors and anxieties of private practice to assume, perhaps, the more delicate and more responsible position of superintendent of the State hospital at Raleigh. Though the dew of the morning had long dried from his locks, the fire of youth seemed again to enkindle upon the altar of his heart, and his mind seemed enthused with a new ambition to give wider scope to his reputation in his new field of labor. Bringing to this new work the fruitage of a ripened experience as a physician, and a mind of fine business training, he diligently applied himself to the study of psychiatry, and with youthful enthusiam was not long in attracting the attention of the State to his success as an alienist and manager of no ordinary ability. Here, as in private practice, he was not content to lag behind, or be satisfied with the success attained by the multitude, but by diligent study and by observation of other hospitals, he was quick to adopt every advanced method of treatment sanctioned by his judgment, and his record in the hospital over which he presided is of more enduring form than any words I can utter, and is worthy the ambition of any man.

Imperfect as this memoir is, it would be more so did I fail to speak of the higher inspiration of his life which was born of

faith in the great physician. Dr. Kirby was a Christian. In early life he became a member of the Presbyterian Church, and for a number of years was an elder, and lived and died in the faith and hope which its doctrines inspire in the true believer. I need say no more. J. F. MILLER.

EDGAR H. SUGG, M. D.

The subject of this sketch, the late lamented Dr. E. H. Sugg, was born in Snow Hill, N. C., on Oct. 18th, 1867, and died at his native home on December 11th, 1900.

Dr. Sugg was prepared for college at Davis' School and fitted for his life's work, the practice of medicine and surgery, at the University of Virginia, and of the City of New York.

The deceased was admitted and licensed to follow his profession by the State Board of Examiners at the annual meeting of the Medical Convention at Elizabeth City, in 1889. Since this time and until his death, a period of eleven years, he has steadily and with merited success and profit lived the life of a country doctor.

Charitable, sympathetic, and loving his work and his people, he had greatly endeared himself to his numerous patients, who, in his death, lose a friend as well as a trusty and faithful family doctor.

He was especially the friend and benefactor of the poor. Ofttimes with no price or reward other than the eternal love and gratitude of the needy, the consciousness of duty done, but the pleasure resultant from frail humanity, strengthened and relieved, he has contributed freely and gladly his time and experience and means for the purchase of necesssary medicine and proper nourishment and has thereby made for himself a monument that will endure when his body and memorial of stone have long ago returned to their native elements.

Indeed, it is with sadness that his large number of friends and associates realize their loss, and truly do they sympathize with an aged father and mother in their sorrow and anguish.

AMICUS.

D. A. ROBERSON, M. D.

Dr. D. A. Roberson, son of Henry P. and Lucy Beard Rober-

son, was born at Florence, Guilford county, N. C., Feb. 5, 1852. He married Miss Fannie Barker, of Summerfield, N. C., with whom he lived most happily. She, two daughters and a son survive him. He attended lectures in Baltimore, where he graduated in 1884. He began practice at Friendship, afterwards moved to Guilford College, and was soon elected by the Board of Trustees as college physician, which position he held in a most acceptable manner until the time of his death. He was an earnest student in his chosen profession, and did a good deal of post-graduate study in Baltimore and New York. After a painful illness extending over several months he died July 19, 1900.

Wm. R. Hollingsworth, M. D.

Dr. Wm. R. Hollingsworth, son of James M. and Elizabeth Hollingsworth, was born Jan. 14, 1836, in Surry county, N. C., and died May 14, 1901, at his home at Mt. Airy, N. C.

On Aug. 15, 1895, he was united in marriage to Susan Eleanor Davis, of Stokes county, N. C., who, with three sons and three daughters, survive him.

He was attending lectures at Jefferson Medical College when the South withdrew from the Union: he came home; was commissioned surgeon by Governor Ellis, and during the war performed his duties under orders, in Surry and adjoining counties. After the struggle was over he returnd to Jefferson Medical College, from which time-honored institution he received his diploma March, 1867.

He was devoted to his profession, and put his life into the amelioration of human suffering. As was aptly said of him, "he practiced medicine not for what he got out of it, but for what he could put in it." He was true, conscientious, modest, gentle and beloved. Impelled by nobelest impulses, his code of ethics was the enbodiment of true politeness, honesty of purpose, and loyalty to the profession he adorned.

A. J. Battle, M. D.

Dr. A. J. Battle was born at Wake Forest College in 1851, and there he received his literary education. He was a man of sound

practical judgment, modest and unassuming in manner, and loyalty itself to his friends.

Upon borrowed money he prosecuted his medical studies at the College of Physicians and Surgeons, of Baltimore, graduating in 1879.

He began practice in Johnson county, where he was very successful, and his influence for good was unmistakably felt in that commnity.

In 1893 he moved to Wadesboro where he soon built up an appreciative and extensive practice.

In January, 1900, on account of his failing health he was persuaded to give up his work, which he reluctantly did, and spent the remainder of the winter in Florida, hoping to mitigate the symptoms of his fatal disease, which he realized could not be cured. He returned to Greensboro with his brother where he died with Bright's disease on June 19, 1900.

He was a friend to education, which he proved by helping two institutions in a very substantial way.

S. J. Love, M. D.

S. J. Love, Long's Store, N. C., was born Jan. 28, 1871; joined the society 1898; died, Sept. 4, 1900.

Nathaniel Shober Sievers, M. D.

Dr. Nathaniel Shober Sievers was born in Salem, N. C., Nov. 15, 1846. He was educated at the Salem Boy's School, Nazareth Hall, Penn., and under a private tutor until the close of 1863, when he joined the 21st N. C. Reg't. and served in the Confederate army until the close of the war. He graduated in medicine from the University of Pennsylvania in 1867. The two following years he studied his profession in Berlin, Prague and Vienna, and began the practice of medicine at his native place in the autumn of 1869.

Without rest or recreation, he devoted all his energies to the arduous duties of the profession for nearly thirty years. His unwearied faithfulness was rewarded by distinguished success. Nearly four years ago his health broke down under the pressing strain. From its incipiency, he was fully aware of the nature of

his disease—locomotor ataxia—and in full possession of his mental faculties he bore his fearful pains and steadily increasing helplessness with characteristic courage and patience. Having thus endured, he was granted a happy rest Jan. 12, 1901. His age was 55 years.

Dr. Sievers possessed in a degree the qualities of a true physician. He was quiet and earnest, patient and conservative, painstaking and resourceful, reticent but positive in his convictions, thoughtful, sympathetic and scrupulously conscientious. With a sincere love for study, he was endowed with a retentive memory, a broad, mental grasp and remarkable faculty for analysis.

He was just, without malice, generous without ostentation, a good citizen, a model husband and father, and above all a pious, humble christian. His untimely death is lamented by all who knew him.

Wm. O. McDowell, M. D.

Dr. McDowell was born at Milton, N. C., Oct., 9th, 1851, graduated at Wake Forest in 1873, took a two years course at the University of Virginia and received his degree from the University of Pennsylvania in 1875, practiced a few months in Union, N. C., and then moved to Scotland Neck, where he labored until his death, August 15th, 1900.

Samuel L. Montgomery, M. D.

Dr. Samuel L. Montgomery, son of Dr. J. H. and Mary A. Montgomery, was born in Montgomery county, N. C. on Aug. 9th, 1854, and died in Apex, N. C., Oct. 26th 1900.

He was educated at a primary school and then at Trinity College, N. C. Read medicine with Dr. W. H. Lilly, of Concord, N. C. and graduated at the Medical University of New York; was licensed by the State Board in Durham, N. C. in 1885.

He settled in Monroe, N. C., there married Miss Cora Winchester Nov. 22, 1882, who died Oct. 11th, 1890. Dr. Montgomery then moved to Concord and formed a copartnership with Dr. Lilly, was married again June 1st, 1892, to Miss Lizzie B. Norris, who with five children survive him. His health being bad he went to Apex to rest and recuperate, and died there

unexpectedly. He was a member of the Methodist Church. Dr. Montgomery was a successful practitioner. He possessed strong common sense and was a good student. He was generous, true and especially kind to the poor. He enjoyed not only the respect but also the confidence of all classes.

Repeated attempts were made to secure data concerning the life and death of other members of the Society deceased since the last meeting, but without success.

JOEL HILL, Chairman,
JOHN C. RODMAN,
*W. T. CHEATHAM.

*Deceased, June 23, 1900.

Dr. Michael Hoke read a paper on "The Pronated Foot" which was discussed by Dr. Munroe.

A paper on "Interscapular Claviculothoracic amputation for Malignant Growth" was read by Dr. R. L. Payne and discussed by Dr. H. A. Royster.

Election of officers for 1902 was then held, resulting as follows:

President—R. S. Young, Concord.

1st Vice-President—A. G. Carr, Durham; 2d Vice-President—I. M. Taylor, Morganton; 3d Vice-President—E. D. D. Carroll, Raleigh; 4th Vice-President—J. M. Parrott, Kingston.

Secretary and Treasurer re-elected.

Dr. E. D. Dixon Carroll read a paper on "Blood Metabolism" which was discussed by Dr. Hays.

The Board of Examiners made the following report:

DURHAM, N. C., May 22d, 1901.

To the North Carolina State Medical Society:

On May 16th, 1901, the Board of Medical Examiners met in Regular annual session at the Hotel Carolina in Durham, N. C., all the members present.

One hundred and four applicants were examined for license to practice in North Carolina. Of this number 2 withdrew, 25 were rejected, and 77 licensed.

An average grade of 80 per cent. is required to obtain license, and the usual system of designating applicants by number, (the

name with address being placed in an envelope, sealed and remaining unopened until the close of the ballot), is still practiced. In registering the applicants for examination this year a specially prepared blank was used with the idea of rendering more complete the personal record of each applicant for license. An inspection, made by the Secretary after the examinations were ended and the ballotting for licentiates completed, of these individual record sheets reveals the interesting fact that of the 95 white applicants (among the ranks of whom there were 18 rejections), only one rejection occurred where applicants had taken an academic degree or advanced to the junior year in college prior to entering upon the study of his profession.

The significance of this record is apparent and renders obvious the duty of the members of our profession to encourage young men about to study medicine to first thoroughly fit themselves to fully grasp and completely master the intricacies of modern medical science.

The average age of those licensed was 26 years—of those rejected 29.

The names and addresses of those licensed are as follows:

Lawrence E. Holmes, Biltmore, N. C.; E. A. Thomas, Winston, N. C.; Wm. A. Graham, Durham, N. C.; E. G. Ballenger, Tryon, N. C.; Jno. Hodges Drake, Jr., Asheville, N. C.; Watson S. Rankin, Erskine, N. C.: B. S. Herring, Wilson. N. C.; Chas. H. Shepard, (col.) Raleigh, N. C.; W. F. Hargrove, Tarboro, N. C.; W. H. Prioleau, Jr., Asheville, N. C.; Jas. W. Peacock, Salisbury, N. C.; O. W. Holloway, Gorman, N. C.; Geo. Ruffin Benton, Wilson, N. C.; G. E. Newby, Hertford, N. C.; Lucius B. Morse, Asheville, N. C.; Dunlap Thompson, Marven, N. C.; H. H. Briggs, Asheville, N. C.; Arthur L. Jones, Silas Creek, N. C.; D. L. Garland, Rabun Gap, Ga.; R. H. Garren, Limestone, N. C.; Jos. Harry Horne, Wilmington, N. C.; F. S. Hargrave, Lexington, N. C.; W. W. Early, Aulander, N. C.; Augustus S. Rose, Fayetteville, N. C.; S. Walter Staley, Liberty, N. C.; Jno. Thomas Hiatt, Ellerbe, N. C.; T. V. Moore, Phœnix, N. C.; Edward C. McEachern, Wilmington, N. C.; Jno. P. Monroe, Sanford, N. C.; E. B. Meadows, Oxford, N. C.; J. E. Foscue, Pollocksville, N. C.; R. H. Speight, Jr., Wrendale, N. C.; G. M.

Maxwell, Davidson, N. C.; Hoagland Cook Davis, Fayetteville, N. C.; Andrew F. Tuttle, Germanton, N. C.; Jno. Alexander MacKethan, Fayetteville, N. C.; Aaron Chapman Woodruff, Sparta, N. C.; M. Hugh McBride, Little River Academy, N. C. W. E. Kornegay, Goldsboro, N. C.; Zenas Fearing, Elizabeth City, N. C.; R. W. Zimmerman, Enterprise, N. C.; L. Lester Self, Lincolnton, N. C.; Jas. F. Dicks, Walkertown, N. C.; Theo. L. Ginn, Goldsboro, N. C.; Etheldred Hooks, Fremont, N. C.; Wm. H. Dixon, Edward, N. C.; H. H. Hunter, Somerton, Va.; E. R. Hart, Tarboro, N. C., Eric A. Abernathy, Chapel Hill, N. C.; W. R. Goley, East Durham, N. C.; Joseph A. Allen, Poindexter, N. C.; J. R. Parker, Laws, N. C.; C. M. Hughes, Cedar Grove, N. C.; Jno. H. Tucker, Henderson, N. C.; Jno. J. Hocutt, Emit, N. C.; H. P. Underhill, Salem, N. C.: R. W. Johnston, Oakdale, N. C.; Claude D. Thompson, Harden, N. C.; Porter B. Orr, West Asheville, N. C.; Paul R. MacFadyen, Clarkton, N. C.; R. Vance Brawley, Mooresville, N. C.; Albert Sherrill, Lenoir, N. C., Peter C. Jurney, Olin, N. C.; Chas. Z. Chandler, Dillsboro, N. C.; W, L. Taylor, Stovall, N. C.; A. F. Williams, Kenansville, N. C.; Arthur J. Edwards, Winston, N. C.; Clyde E. Cotten, Black Mountain, N. C.; S. P. Watson, Rock Hill, S. C.; Geo. W. MacGregor, Pinehurst, N. C.; Wm. R. Kirk, Hendersonville, N. C.; Henry H. Knapp, Bethania, N. C.; Claude L. Pridgen, Kinston, N. C.; Louis C. Skinner, Greenville, N. C.; Thos. M. Green, Wilmington, N. C.; Francis O. Rogers, Concord, N. C.;

The following is a tabulated statement of the applicants graduating from the various Medical Schools of the country, with the disposition of the same:

	Applied.	Withdrew during Examination.	Rejected.	Licensed.
Southern Medical College of Atlanta, Ga	1		1	
Tulane University of Louisiana, La	1			1
Chicago Homeopathic Medical College, Illinois	1			1
Yale University, Connecticut	1			1
Medical College of Alabama, Alabama	1			1
University of Michigan, Michigan	1			1
College of Physicians and Surgeons, New York, N. Y.	1			1
University of Maryland, Maryland	15			15
Jefferson Medical College, Pennsylvania	4			4
University College of Medicine, Virginia	18		1	17
Maryland Medical College, Maryland	2	1	1	
Hospital College of Medicine, Kentucky	1			1
University of Nashville, Tennessee	6		4	2
Dartmouth Medical College, New Hampshire	1			1
Medical Department University of Wooster, Ohio	1			1
Medical Department University of Vermont, Vermont.	1		1	
Baltimore Medical College, Maryland	3		2	1
University of Virginia, Virginia	3			3
Chattanooga Medical College, Tennessee	1		1	
Medical College of Virginia, Virginia	8		1	7
Atlanta College of Physicians and Surgeons, Georgia.	2			2
University of the South, Tennessee	1		1	
University of Tennessee, Tennessee	3		1	2
Atlanta Medical College, Georgia	1			1
Baltimore University, Maryland	1		1	
Tennessee Medical College, Tennessee	2		2	
Meharry Medical College, Tennessee, (colored)	1		1	
North Carolina Medical College, North Carolina	7		1	6
Leonard Medical College, North Carolina, (colored)	7		5	2
Howard University, District of Coiumbia, (colored)	1		1	
College of Physicians and Surgeons, Baltimore, Md	1			1
Medical College of South Carolina, South Carolina	3	1		2
University of Pennsylvania, Pennsylvania	3			3
	104	2	25	77

The highest grades made in this examination were as follows:

Dr. Wm. Alexander Graham, of Durham, N. C., average 94$\frac{6}{7}$.

Dr. Laurence Edward Holmes, of Asheville, N. C., average 94.

Dr. Edward A. Thomas, of Winston, N. C., average 92$\frac{4}{7}$.

J. Howell Way, Waynesville, Secretary.

Wilmington was selected as the next place of meeting, the exact time to be left to the local committee.

The finance committee reported as follows:

We, your Committee on Finance, having examined the books and vouchers of the Treasurer, beg leave to submit the following report:

RECEIPTS.

May 23, 1900, To balance on hand, - - -	$127.00
" 25, " " Am't received as dues, - -	473.00
Oct. 11, " " " " " - -	158.00
May 20, 1901, " " " " - -	67.00
Total receipts, - - - - - - -	$825.71

EXPENDITURES.

May 23, 1900, By cash Dr. G. W. Pressly, salary, -	$125.00
By cash Dr. G. W. Pressly, Secretary, stationery, etc., - - - - - - - -	114.64
By cash A. E. Cates, Stenographer, - -	25.00
By cash rent of type writer, - - -	2.40
May 25, By cash G. T. Sikes, Treasurer, salary, -	100.00
June 11, " New & Observer Printing Co., Printing, - - - - - - -	5.00
July 12, By cash Queen City Printing Co., paper,	8.25
Sept. 29, " Postage for Treasurer, - -	5.04
Oct. 11, " Queen City Printing and Paper Co., for Transactions, - - - - -	303.00
May 20, 1901, Postage to Dr. Sikes, Treasurer, -	.60
Total, - - - - - - - - - -	$688.93
Balance on hand May 20, 1901, - - -	$136.78

We recommend the usual assessment of $2 per capita; that the salary of the Secretary be $125, and that of the Treasurer be $100 for the next year.

We recommend that a stenographer be employed at a maximum salary of $25.

C. M. Poole,
W. S. Anderson,
L. J. Picot,
N. P. Boddie,
Isaac M. Taylor.

Dr. J. Allison Hodges, of Richmond, was elected an honorary member of the Society. The meeting then adjourned until 9 P. M.

EVENING.

Society called to order at 9 P. M. In the absence of the essayist and orator, unfinished business was taken up.

Dr. J. P. Munroe read a paper on "The Importance of Early Diagnosis and Treatment of Tuberculosis," and it was discussed by Drs. Weaver, Payne, High, Hodges and Rodman.

Committee on nomination reported.

Orator—John C. Rodman, Washington.

Essayist—Eug. B. Glenn, Asheville.

Leader of Debate—A. A. Kent, Lenoir.

Board of Censors—H. W. Lewis, A. Cheatham, Oscar McMullan.

Publication Committee—Geo. W. Pressly, John C. Montgomery, R. L. Gibbon.

Legislative Committee—R. H. Lewis, S. W. Stevenson, Abner Alexander, C. M. Poole, H. A. Royster.

Obituary Committee—E. G. Moore, Jno. M. Manning, J. A. Burroughs.

Board of Censors made following report:

THE ACADEMY OF MEDICINE OF DURHAM VS. DR. R. A. MOORE.

To the Medical Society of the State of North Carolina:

Gentlemen:—The Academy of Medicine of Durham, through a committee appointed for that purpose, have presented to your Board of Censors certain charges and specifications against Dr. R. A. Moore, of Durham, asking that this Board of Censors recommend to your honorable body that the membership of Dr. Moore, in this Society, be annulled.

Your Board of Censors have heard the evidence in this case and beg leave to report that it appears that Dr. Moore did become a member of the Society by virtue of a certificate of registration issued by S. M. Holt, Clerk of the Superior Court of Chatham county, which registration was not lawful, inasmuch as Dr. Moore did not practice medicine before the 1st of January, 1885, or exhibit a diploma issued before the 7th of March,

1889, and that under such registration he was not entitled to membership as provided for in Article 3, Section 2, of the Constitution.

It does appear, however, that in 1897 Dr. Moore presented himself before the Board of Medical Examiners, at which time he told the Board of Examiners that he was then satisfied that his registration was illegal, and asked for an examination from the Board of Examiners, knowing that a license from that Board would cure the error which had been made and by which he entered this Society. It does not appear that any protest was made against such examination, alleging immoral conduct, or acts prohibiting the Board of Examiners from admitting him to examination. He did appear before said Board of Examiners, was examined and licensed as attested by the certificate of said Board in the form of a regular license issued under the hands and seals of all the members of the Board, and therefore he is now a lawful practitioner of medicine in the State of North Carolina, and entitled to the rights and privileges accorded by the statute regulating the practice of medicine. In view of these facts, this Board of Censors find no sufficient reason to recommend that Dr. Moore's name be stricken from the roll of the Society.

All of which is respectfully submitted.

G. G. Thomas,
M. H. Fletcher,
R. H. Speight,
L. J. Picot,
C. M. Poole.

Your committee appointed to report on the President's admirable address desire to submit the following:

That we endorse the address as a whole, and commend it to the favorable consideration of every member of the society.

That the numerous valuable suggestions, if carried out, can but strengthen our organization and promote its growth and development.

To this endorsement we make one exception:

While we heartily commend the spirit of the suggestion of a prize fund of $1,000 for an original investigation which will be

of permanent benefit to humanity, yet, in the opinion of the committee, it is deemed inexpedient to make an appropriation for that purpose at this time.

We desire to emphasize the great importance of the suggestion, that the present law regulating the practice of medicine in this State be so amended as to define what the practice of medicine means in a legal sense, and further advise that the Legislative committee be instructed to give this matter their careful attention.

GEO. W. LONG,
H. W. LEWIS,
W. H. HARRELL,
BENJ. K. HAYS.

Dr. H. W. Lewis read a paper on "Typhoid Fever in the Rural Districts of North Carolina," and it was discussed by Drs. Munroe, Kent, Summerell, R. H. Lewis, Weaver, Long and Hays.

Society then adjourned.

Society met at 10 A. M.

On motion all papers on the regular program which had not been read were referred to the committee on publication.

The committee on Pittman prize reported that the papers this year was not up to the standard contemplated and the prize was not awarded. Report was accepted.

It was announced that there would be a barbecue in honor of the Medical Association to which all members were invited.

Installation of officers.

Dr. R. S. Young was conducted to the President's chair and was received with loud applause. He expressed in a few well-chosen words his appreciation of the honor the Society conferred upon him and his ambition to make his administration an efficient one.

On motion of Dr. Laughinghouse it was voted that the thanks of the North Carolina Medical Society be extended to the citizens of Durham and the local committee on arrangements for the successful way in which they had entertained the Society.

Dr. Thomas Parrot under suspension of the rules was elected a member of the Society in the absence of the Credential Committee.

Chairmen of sections for next year were announced as follows:

Practice of Medicine—Dr. David J. Hill, Lexington.

Anatomy and Surgery—Dr. A. S. Pendleton, Warrenton.

Materia Medica and Therapeutics—Dr. J. B. Wright, Granite Falls.

Obstetrics—Dr. E. A. Moye, Greenville.

Pathology and Microscopy—Dr. A. J. Crowell, Charlotte.

Medical Jurisprudence and State Medicine—Dr. J. F. Nicholson, Richlands.

Gynæcology—Dr. J. Earnest Stokes, Salisbury.

Pediatrics—Dr. E. D. Dixon Carroll, Raleigh.

Chemistry and Physiology—Dr. Frank O. Rogers, Concord.

Railway Surgery—Dr. J. H. Manning, Rocky Mount.

Conjoint Meeting With the State Board of Health.

The conjoint meeting with the State Board of Health was called to order at 12 M. of the second day. President Geo. G. Thomas in the chair.

Dr. Thomas spoke as follows: I can not let this opportunity pass, as a presiding officer of this Board, without saying a few words out of the fullness of my heart for the good man, Dr. Chas. J. O'Hagan. His figure was as striking as his character. He was eminently a good lover and a good hater, and I consider these good qualities. He yielded to no man in what he believed was law and order. He loved and upheld his friends whenever an opportunity came for the furtherance of whatever they sought to protect, and he stood a strong barrier against the encroachment of wrong not only in the Society, but in the world in which he lived. During the 30 years I have been connected with this Society I have no recollection of hearing any man speak unkindly, less than lovingly and admiringly of this good man who has left us. It was my good fortune to know him intimately, and I thank God for it. I know I am a better and a truer man for that association.

Annual Report of the Secretary of the State Board of Health, May 1, 1900—May 1, 1901.

The past year has been marked by greater progress in our efforts to protect the public health than any equal period in the history of the Board. Our work in trying to educate the public mind up to the importance and value of sanitation in its various forms is beginning to tell. The evidence of this is seen in the provision made by the Department of Agriculture for the free biological analyses of suspected drinking waters, in addition to the chemical analyses it has been making for years; in the val-

uable amendments to our health law made by the last Legislature—and made not grudgingly but in a liberal and enlightened spirit; in the enactment of a law regulating the embalming of dead bodies; in the increase in the number of public water supplies—eight or thirty-three per cent. actually, and many more prospectively; and in the greater interest taken by the people generally in such matters.

The full report of the work of the Board in detail from our last meeting at Tarboro to January 1, 1901, will be found in the Eighth Biennial Report, a copy of which will be gladly mailed to any one desiring it, and to which those interested are referred.

Water Analyses.

The value of a bacteriological examination in locating the cause of typhoid fever in contaminated or infected drinking water is now thoroughly established. There are probably from eight to ten thousand cases of typhoid fever in the State every year. In many instances a number of cases following one another at longer or shorter intervals have their origin in a common infected well or spring. If the drinking water supply of the first case should be *promptly* examined bacteriologically, and the fact of its infection demonstrated, a number of the later cases could be prevented. Realizing this and desiring to bring it directly to the attention of the profession, together with the fact that the examination could be obtained free of charge, I mailed to every physician in the State the following letter, in addition to publishing essentially the same thing in *The Bulletin*, which they also received:

RALEIGH, N. C., January 20, 1901.

My Dear Doctor:—As you will have noticed in THE BULLETIN for December, mailed you the first of the month, the State Agricultural Department has made provision for the bacteriological examination of drinking waters suspected of carrying disease. Since the article in THE BULLETIN was written the Honorable Commissioner of Agriculture has ruled that all applications for such analysis must be made to the Secretary of the State Board of Health and approved by him before the work

will be done, for the purpose of guarding his laboratory against too numerous applications based on mere curiosity. As the county superintendent of health is the recognized health officer of every county, application should first be made to him, giving the reasons for suspecting the water, with request that he approve and forward to me, and upon receipt I will, if satisfied as to the necessity for the analysis, forward permit direct to you. In urgent cases application may be made direct to me.

Whenever a case of undoubted typhoid fever occurs in a family, their drinking water should be analyzed bacteriologically as soon as possible. By promptly having this done many cases of that disease would be prevented. So, if you have any cases of typhoid fever in your practice, send for permit, stating in your application the number of cases and the conditions.

Very truly yours,

RICHARD H. LEWIS,
Secretary.

My efforts in this direction have, I regret to say, borne but little fruit, only thirteen applications for analysis having been made by physicians in nearly four months. The indifference of the profession in this matter I find it difficult to explain, for while it is the duty of the physician to cure disease, it is none the less his duty to prevent it when he can—as all worthy of their calling will, of course, admit. If we do not avail ourselves of the privilege offered us it will, I fear, be withdrawn. Unless the value to the people of the State of this work can be demonstrated to the satisfaction of the Board of Agriculture it will surely be discontinued, and when it is too late we will realize what we have lost. I hope, therefore, every one who hears or reads this will make it an invariable rule in every case of typhoid fever, immediately upon making the diagnosis, to write me for a permit and a sterilized bottle. While in the letter, in order to show proper respect for the office of county superintendent of health and perhapts protect the Department of Agriculture from occasional unnecessary work, I made it a condition of the issuance of the permit that the application, except in urgent cases, should first be made to that official, who would approve

and transmit to me, I have since abandoned it as being cumbersome and promotive of delay. As a matter of fact all these cases are urgent cases, and a direct application to me will secure the permit and bottle at once.

LEGISLATION.

Realizing from our experience in the management of small-pox during the past three years that our law of 1893 was defective in a certain vagueness as to the duties and powers of county authorities in matters pertaining to the public health, I prepared and secured the passage by the General Assembly of the act amendatory thereto given below. This was done, I am glad to say, without difficulty, as was to have been expected of a body of men of such intelligence and character as those composing the recent Legislature. Although nearly all the members supported the bill, I feel that special acknowledgement should be made to Senators Justice and Henderson, of the Judiciary Committee, for legal advice, and to Dr. Speight, of Edgecombe, in the Senate, and Dr. Stevenson, of Iredell, in the House, for valuable aid.

The following is the act:

AN ACT TO AMEND AN ACT RELATING TO THE BOARD OF HEALTH, CHAPTER 214, LAWS OF 1893.

The General Assembly of North Carolina do Enact:

SECTION 1. That section 2 of chapter 214, Laws of 1893, be amended by striking out in line two the words "two years" and inserting in lieu thereof the following: "two for four years and two for six years and their successors for six years," and by striking out in line five the words "two years" and inserting in lieu thereof the following: "one for two years, two for four years and two for six years and their successors for six years."

SEC. 2. That section 4 be amended by striking out the lines three and four respectively the word "two" and inserting in lieu thereof the word "six."

SEC. 2. That section 5, as amended by chapter 201, Laws of 1897, be stricken out and the following substituted therefor:

"SEC. 5. There shall be an auxiliary board of health in each

county in the State, whose function shall be, upon the call of the chairman of the board of county commissioners, to advise the county authorities in all matters pertaining to the public health. These boards shall be composed of all registered physicians resident in the county. From this board two physicians shall be selected, one by the chairman of the board of county commissioners, and one by the mayor of the county town, who, together with the board of county commissioners, shall constitute the county sanitary committee, of which committee the chairman of the board of county commissioners shall be *ex officio* chairman. Their term of office shall be coterminous with that of the commissioners with whom they serve, and when on duty they shall receive the same compensation as is received by the county commissioners. The county sanitary committee shall have the immediate care and responsibility of the health interests of their county. They shall make such rules and regulations, pay such fees and salaries and impose such penalties as in their judgment may be necessary to protect and advance the public health. And any person violating such rules and regulations shall be guilty of a misdemeanor and may be fined not exceeding fifty dollars or imprisoned not exceeding thirty days. They shall elect a registered physician, not a member of the sanitary committee, to serve two years, with the title of county superintendent of health, and shall fix his compensation. The duty of the county superintendent of health shall be to carry out as far as possible such work as may be directed by the county sanitary committee and the State Board of Health. He shall always promptly advise the Secretary of the State Board of Health of the unusual prevalence of disease in his county, especially of typhoid fever, small-pox and cholera. He shall make the medico-legal post-mortem examinations for coroner's inquests, attend the inmates of the home for the aged and infirm and the prisoners in the jail or convict camp of his county, and make examinations of lunatics for commitment. He shall be the sanitary inspector of the home and jail, including convict camps, of his county, making monthly reports to the county commissioners and to the Secretary of the State Board of Health."

SEC. 4. That section 8 be stricken out and the following substituted therefor: "The meeting of the State Board of Health for the election of officers shall be on the second day of the annual meeting of the Medical Society of the State of North Carolina in 1901, and every six years thereafter; and if the county sanitary committee for the election of a county superintendent of health on the first Monday in May, 1901, and every two years thereafter."

SEC. 5. That section 14 be amended by inserting after the word "commissioners" in line five the words "or county sanitary committee."

SEC. 6. That section 15 be amended by inserting between the words "town" and "near" at the end of line two the words "or the sanitary committee of a county;" by striking out after the word "town" in line fourteen the words "or county board of health" and inserting in lieu thereof the words "board of health or county sanitary committee;" and by striking out after the word "town" in line twenty-one the words "or county board of health" and inserting in lieu thereof the words "board of health or county sanitary committee."

SEC. 7. That section 23 be amended by striking out all of said section from the beginning of line ten and inserting in lieu thereof the following: "the sanitary committee of any county may make such regulations and provisions for the vaccination of its inhabitants and impose such penalties as they may deem necessary to protect the public health; and any person violating such regulations shall be guilty of a misdemeanor and may be fined not exceeding fifty dollars or imprisoned not exceeding thirty days."

SEC. 8. That section 25 be amended by adding thereto the following: "And any person violating such regulations shall be guilty of a misdemeanor and may be fined not exceeding fifty dollars or imprisoned not exceeding thirty days."

SEC. 9. That section 7 having been repealed the number of 8 be changed to 7 and of all subsequent sections in accordance therewith.

SEC. 10. That this act shall be in force from and after its ratificaiton.

It will be seen that, stated in a few words, to quote from the editorial comments thereon in *The Bulletin* for February, these amendments "consist essentially: In increasing the term of members of the State Board of Health from two years, all expiring at the same time, to six years, so arranged as to expire at different times, thereby assuring a continuing board; in the creation of a 'county sanitary committee,' composed of the board of county commissioners and two physicians and endowed with definite responsibilities and powers, and in restoring the term of office of county superintendent of health from one to two years. Our law has always been defective in not providing proper machinery for its administration by counties. That defect is now remedied as satisfactorily, we think, as the conditions obtaining in our State will permit. It will also be noted that the medical profession is recognized as far as practicable, and this we hope will revive their interest in sanitary matters. It is true that the control remains in the hands of the board of county commissioners, as they will always be in a majority, but in all matters pertaining to the public health, including the election of a county superintendent of health, two physicans will have a voice."

It also appears that the State Medical Society must at this meeting elect two members to serve for six years, and two for four years, with the following members appointed by His Excellency, Governor Aycock, viz.: Drs. W. P. Ivey and Richard H. Lewis for six years, Drs. George G. Thomas and Francis Duffy for four years, and Mr. J. L. Ludlow, C. E., for two years.

In order that there might be no miscarriage in the organization of the county sanitary committees, I addressed a letter on March 2d to every board of county commissioners calling their attention to the amended laws, at the same time mailing them a copy, and again on March 28th I wrote to the chairman of every board and to the mayor of every county town, reminding them of the duty imposed upon them of each appointing a physician to serve as a member of the county sanitary committee. Although I specially requested that I should be notified of the appointments and enclosed a postal card for reply, there are still a number of counties and towns to be heard from, and it is there-

fore impossible to say how many county sanitary committees have been properaly organized.

The first fruits of this creation of practically a county board of health was shown in a request from the committeee of Guilford county to your secretary to visit Greensboro and advise with them as to the probable cause of much malarial fever just north of the city in reeent years, and the best means of removing it; and in a similar request from the committee of the county of Durham to go to Durham and advise with them as to the best management of the small-pox which had gained a foothold in the county. I complied with both requests.

SMALL-POX.

The history of small-pox in the State during the past year is practically a repetition of that for the preceding two years, although the number of cases is nearly one thousand less, being 1,945 against 2,806 for the year 1899–1900, of whom 530 were white and 1,415 colored—a somewhat larger proportion of whites than heretofore. The death rate has also been lower, 2.83 per cent. for the whites against 4.78 per cent., and 1.63 per cent. for the colored against 1.44 per cent.; total 1.95 per cent. against 2.31 per cent. This decrease is probably due to the vaccination of a considerable proportion of the people through the influence of previous scares, for otherwise a reasonable expectation was that there would be more cases instead of fewer. This explanation is rendered more probable by the fact that this last year the disease has prevailed chiefly in the country districts where vaccination has not been practiced as it has been in the cities and towns, centres of population and trade.

Some time since I received from a friend a copy of a poster illustrated with pictures of cases of small-pox, and containing the announcement, "vaccine sold here," which he had picked up in Tennessee, and which was accompanied by a letter suggesting that they might be made useful in this State. It revived a suggestion I made to the Board several years ago to placard the State with the simple rules of health, and immediately appealed to me, so I wrote the Mulford Company asking if they could furnish me with similar posters signed by the Board, and at

what price. In response they kindly sent me several thousand in the form desired without charge. I have distributed them in a number of counties where small-pox was prevailing and they seem to have been of service. The man who would "rather have small-pox than be vaccinated" stops talking after seeing the pictures. The small-pox inspectors, whose reports are attached, have continued to be of much service, Governor Aycock having given his consent to their employment, as required by the section of the law making a special appropriation for use when rendered necessary by pestilential disease. In tabulated form the small-pox statement is as follows:

COUNTIES.	NUMBER OF CASES.			NUMBER OF DEATHS.		
	White.	Col'd.	Total.	White.	Col'd.	Total.
Alamance	.....	3	3	.....	.....	.....
Alexander	.....	2	2	.....	.....	.....
Buncombe	13	22	35	.....	.....	.....
Burke	44	15	59	.....	.....	.....
Cabarrus	3	25	28	.....	1	1
Caswell	56	110	166	5	1	6
Chatham	7	6	13	.....	.....	.....
Cherokee	1	1	2	.....	.....	.....
Cleveland	2	38	40	.....	1	1
Craven	3	28	31	1	2	3
Cumberland	32	74	106	.....	.....	.....
Currituck	.....	7	7	.....	1	1
Davidson	8	50	58	.....	.....	.....
Davie	1	9	10	.....	.....	.....
Durham	12	90	102	.....	.....	.....
Edgecombe	.....	17	17	.....	.....	.....
Forsyth	2	73	75	.....	2	2
Franklin	.....	50	50	.....	.....	.....
Gaston	40	8	48	.....	.....	.....
Gates	.....	17	17	.....	.....	.....
Granville	26	8	34	.....	.....	.....
Greene	52	140	192	.....	.....	.....
Guilford	14	16	30	.....	.....	.....
Halifax	2	22	24	.....	.....	.....
Harnett	12	15	27	.....	.....	.....
Henderson	4	1	5	.....	.....	.....
Hertford	.....	1	1	.....	.....	.....
Iredell	5	.....	5	.....	.....	.....

COUNTIES	NUMBER OF CASES.			NUMBER OF DEATHS.		
	White.	Col'd.	Total.	White.	Col'd.	Total.
Johnston	7	8	15	.....	.....	.....
Lenoir	.....	1	1	.....	.....	.....
Lincoln	2	.....	2	.....	.....	.....
Mecklenburg	30	88	118	1	2	3
Moore	.....	18	18	.....	1	1
Nash	16	58	74	2	2	4
New Hanover	1	8	9	.....	.....	.....
Orange	9	32	41	.....	.....	.....
Pamlico	.....	30	30	.....	.....	.....
Pasquotank	.....	10	10	.....	2	2
Person	11	29	40	.....	1	1
Pitt	.....	7	7	.....	.....	.....
Polk	9	.....	9	.....	.....	.....
Randolph	2	8	10	.....	.....	.....
Richmond	.....	1	1	.....	.....	.....
Robeson	.....	52	52	.....	2	2
Rockingham	35	108	143	2	2	4
*Rutherford	.....	.....	.....	1	.....	1
Stanly	6	15	21	.....	.....	.....
Transylvania	.....	.....	.....	.....	.....	.....
Vance	3	2	5	.....	.....	.....
Wake	10	71	81	1	1	2
Watauga	10	.....	10	.....	.....	.....
Wayne	.....	4	4	.....	.....	.....
Wilkes	.....	17	17	.....	.....	.....
Wilson	.....	.....	.....	.....	.....	.....
Yancey	40	.....	2	4	.....	2
Total (in 54 counties)	530	1,415	1,945	15	23	36
Death-rate, per cent	.....	.....	.....	2.83	1.63	1.95

*Number of cases not reported; deaths only. The county of Wilson has been omitted from the above table for the reason that the figures could not be obtained from the County Superintendent of Health because, in his opinion, there had been no small-pox. In his reply to my letter asking for his report on small-pox for the year he writes:

"Our discussion to-day before our County Society was the eruptive disease that has prevailed in this county for the past three months, and it was the unanimous opinion that it is not small-pox. I suppose there have been 500 cases in the town and county and only one death, and that in an old man who was sick with la grippe nine days before he broke out."

On the other hand the small-pox inspector for that section of the State, who was sent to the county at the request of a member of State Board of Health living there, says the disease was small-pox (see report of Dr. Tayloe (*infra*), and two of the leading physicians of the county in a letter to the inspector dated May 11, 1901, say: "We believe there has been small-pox in the county in the practice of other physicians, and we know there are cases of small-pox we have seen."

The above is a simple statement of the facts in the possession of the Secretary and the candid reader can draw his own conclusions, relying in doing so on the good character and sincerity of all the parties to the controversy.

In conclusion, it is safe to say that we are justified in feeling encouraged, and with the more active support from the profession at large still greater progress is in reach.

Report of the Small-Pox Inspectors.

Report of Small-Pox Inspector L. Harrill, M. D.

STATESVILLE, N. C., May 15th, 1901.

Dr. R. H. Lewis, Secretary State Board of Health, Raleigh, N. C.:

Sir: I send the following report of visits made as small-pox inspector during last year:

June 13, 1900.—Went to Lincolnton and examined a suspected case, but did not find small-pox.

Dec. 13, 1900.—Went to Taylorsville, found one case in discreet form, a negro.

Jan. 6, 1901.—Went to King's Mountain where I saw two cases both white men.

Feb. 3.—Went to Gastonia and found three cases, all whites.

Feb. 5.—Went to Triangle, Lincoln County, and saw one case, a white man.

Feb. 9.—Went to Shelby and saw one case, a young white man. Other cases were reported in the county among negroes, but I did not see them.

March 2 to 5.—Went to Burnsville but did not see a single new case. Many cases had recovered. Two deaths in Yancy county.

March 6, 1901.—Went to Durham where I saw one case, a white man in town, and three other white men at the Hospital. Also 11 cases, all negroes, at the Hospital. Other cases were reported in the county at that time, but I did not see them.

Respectfully submitted,

L. HARRILL, M. D.,
Inspector.

Report of Small-Pox Inspector Joshua Tayloe, M. D.

Dr. R. H. Lewis,
Secretary State Board of Health,
Raleigh, N. C.

Sir: I submit herewith to the State Board of Health, the following report of my work, as Small-Pox Inspector, from May 1st, 1900, to May 7th, 1901. In this report, I give the towns, counties, number of cases examined, how managed and by whom, also what precaution had been taken up to the time of my inspection.

January 9th and 10th. I visited Fayetteville and Manchester, this being my first inspection for this year. I examined 15 cases, 13 colored, 3 white. One white suffered from the confluent form of the disease. These cases were managed by Dr. McGougan, Superintendent of Health. Some precautions had been taken.

February 8th and 9th. I visited some points in Robeson County, and examined 5 cases of the mild type of the disease, which were under the care of Superintendent of Health, Dr. Pope; necessary precautions having been taken.

February 10th. I inspected the condition in Green County. I examined 12 colored, 2 whites. Many other cases existed that I did not examine. This county was sadly neglected, and no precautions had been taken until after my inspection. Drs. Grimsley and Green took charge of this much neglected section.

February 11th. I made an inspection in Wilson County, examining one case shown me by the Superintendent of Health, which was a well marked case of variola. I examined 9 other cases shown me by a local physician equally as well marked. All these were colored. I was informed that the disease then existed among many whites, which I did not have the opportunity to see. In the house of the one case shown me by the Superintendent of Health, the patient informed me that she had just lost her son with the same disease, in another house pointed out to me by a local physician, in which I found 6 members constituting the family. All suffered from the disease except one

who had been successfully and recently vaccinated. Very slight precautions had been taken.

February 14th. Near Weldon in Halifax County, I made an inspection of one case, white, confluent in character and quite an ill patient. Saw 3 colored cases which had about recovered from the disease. To say these cases were in the care of Dr. Green, Superintendent of Health, is a sufficient warrant that they were well managed and all precautions taken.

February 19th. I examined some suspects at Ayden, Pitt County, and finding they did not have variola, they were dismissed.

March 5th. At Farmville, Pitt County, I examined 6 cases, all negroes, suffering from a discreet form of small-pox. These cases were under the care of Dr. Laughinghouse, Superintendent of Health, and well managed.

April 18th. At Benson, I examined 7 cases, 5 white and 2 colored. Of these one white and one colored suffered from the confluent type, the others were the mild form of the disease, well cared for by Dr. G. E. Parker.

April 19th. I visited Dunn and Four Oaks, and advised with the proper authorities relative to effective quarantine, on account of the disease being near by. Also urged thorough vaccination.

May 7th. I made inspection at Smithfield, examined one case, colored, had confluent small-pox, was well managed by Dr. Wharton, Superintendent of Health,

At many points I visited in the State, I did not examine all the cases, but only a sufficient number to satisfy myself and local authorities.

Small-pox has existed during this epidemic in all its varieties, from the mild, modified and seemingly insignificant type to the confluent form with all its horrors. In each town or county where I made inspections I would submit to the town and county commissioners and local health board my report, giving therein diagnosis and advising as to the best possible means of stamping out and controlling the disease. Also described the full technique of caring for patients and handling suspects, suggesting as thorough vaccination as possible in every section which I visited.

We are free to admit that a large majority of cases seen in the present epidemic are of the mild type of the disease, yet that is no evidence that the eruptive fever is not genuine variola, as the same type of disease is now and has been prevalent in a great many of our states for the past two or three years.

This eruptive fever that is now prevalent, seems to answer to every description of small-pox as described by the best authors. Its clinical history, progress and infection along with the typical eruption excludes a reasonable probability of any other disease.

The fact that this epidemic has been characterized by extreme mildness has in some instances led to uncertainty in the minds of a few physicians who had seen but a case or two without a knowledge of the condition elsewhere, or else who failed to correctly observe or interpret the true nature of the case with which he dealt.

Again, in a few other cases, physicians have denied the existence of variola from, to say the least, rather questionable motives. In fact, we have knowledge of more than one case in which written reports denying the existence of the disease in certain localities have been signed by physicians who are known never previously to have seen a case of variola, nor ever to have visited one of the cases the nature of which they were discussing. Comment in such cases is, of course, unnecessary.

JOSHUA TAYLOE,
Small-Pox Inspector.

The Secretary called attention to the fact that there was a difference of opinion between the County Superintendent of Health on the one hand and the State Small-pox Inspector and a resident member of the State Board of Health on the other as to the nature of an eruptive disease prevalent in Wilson county, the former claiming that it was not small-pox and the latter that it was, and asked for the views of the session as to how it should be reported.

Dr. Anderson.—The case that occurred in town I watched closely from the time I was called until the patient was well. The eruption came out about the second day, the fever continued until the fourth or fifth day. The eruption came out in consecutive crops and not a single one of these eruptions went to sup-

puration, and hence no secondary fever. I have never seen a case of small-pox where the vesicles did not suppurate and the patient have a secondary fever. You can not find an author, young or old, but that says it has an incipient course to run, that at about the 8th or 9th day the pustules erupt and produce secondary fever. I have studied the cases of my county since January and have not seen a single case where a single vesicle suppurated. In all good conscience I did not feel like pronouncing it small-pox when I knew it was not. The gentleman sent for the expert and possibly before he saw the case he knew it was small-pox, and when I took him to the place the pustules were still hard and he said, oh! yes, it is small-pox. I said, doctor, I do not believe there is an expert under heaven who can tell it until it has time to develop and the fever develop. I wrote Dr. Lewis if there was any symptom whereby small-pox could be diagnosed other than secondary fever, I wanted to know it. One of the town physicians took this expert into the country, five miles without consulting me at all. The expert told me there were six or seven cases of small-pox there, one typical one. He said she had the secondary fever. I went there at once, put my thermometer in her mouth and her temperature was 99.5. I went back next morning and her temperature was normal, and that was the ninth day. There are a number of cases in our town that all the doctors call chicken-pox, and that is one reason why it is so hard to quarantine. The doctors who complained the most would treat negroes for small-pox and white people for chicken-pox. I would quarantine the negro. A good many people would go about there on the streets working, broken out.

As for it being small-pox, we have had all those cases and only one death, and that was an old man who had a chill and was sick nine days before the eruption. The Chairman of the Sanitary Board came over to consult with myself and I asked the Chairman of the Board of County Commissioners to get all the doctors together and let's discuss the matter, and I believe with unanimous consent, one doctor not giving his full consent to the action, we agreed that the thing to do was to let the matter go. Mr. Chairman, it is the right of every man in this hall to know how to diagnose small-pox, and he can do it.

Dr. H. W. Lewis.—This question of diagnosis illustrates the fact that doctors will disagree. In Portsmouth, Va., the same question arose. There is where North Carolina got the small-pox, though they claim they got it from us. Whenever they have had small-pox the question exists. I would like to ask the doctor if these eruptions appeared in people who had been successfully vaccinated.

Dr. Anderson.—Yes sir.

Dr. Lewis.—Then I would ask him how did he know they were successfully vaccinated. Vaccination is one of the most deceptive things we have to contend with. People with sore arms, and even scars, have been shown not only to be susceptible to small-pox but to revaccination time and again. The vaccination to be thorough must exhibit the constitutional symptoms.

Dr. Anderson.—Two years ago we vaccinated about 1,500 people in our town. One of my boys did not take well and I vaccinated him again, when this scare came. It took well this time. Both my boys had this eruption, and just before I left home an old negro woman told me she had nursed small-pox in the war and had had this eruption on her. In the case of this woman who had the case which the expert pronounced genuine smallpox, I thought I had a test case there. Her two children had been vaccinated, her baby had not been. One of the children and the unvaccinated child took it at the same time. I never could get but one of the doctors to go but one time to see that case. On the eight or ninth day the eruptions were nearly dry. The unvaccinated child had slight spasms.

Dr. H. W. Lewis.—I do not deny the existence of chicken-pox in the town of Wilson. Vaccinated people are frequently not vaccinated. Last year a convict was discharged from the penitentiary farm, having been previously vaccinated. He went to Norfolk and returned to North Carolina with a case of small-pox. Upon that man's arm were two large scars inflicted by vaccination he had received at the State farm. He had a very severe case of small-pox. He got well but came out thoroughly pitted, his face honeycombed. A certain proportion of cases will have variola. They sent in Norfolk and Portsmouth for marine experts, and this disease without a dissenting voice was

pronounced small-pox. It was as mild as the epidemic which has been described in Wilson. When a man is thrown in contact with eruptions such as severe cases of chicken-pox there is but one thing to do—quarantine the town. The more fuss you make the better. Some deaths are necessary to make people rush to vaccination for protection.

Dr. Fletcher.—For some time after we had some cases in our county I labored under the same delusion under which Dr. Anderson is laboring. I expected something more severe and formidable. From those mild cases we had there developed confluent cases of small-pox. I was forced to change my diagnosis.

Dr. Anderson.—I think we must rely on some authority as to what these things are. Every physician at Wilson who saw the epidemic here said it was not small-pox, the laymen said they did not think it was small-pox. They told me that this man, five miles in the country, had confluent small-pox; it never became confluent at all. When the pustules fail to run together it is discreet. There has not been a confluent case in my county. The difference in New York small-pox and mine is that they die 20 to 25 per cent. in New York, and in mine only one case.

Dr. R. H. Lewis.—That is not the kind of small-pox that we have in North Carolina and over the United States. In Ohio, Michigan and elsewhere the death rate is about 1 per cent. The epidemic that we have had in this country for the last three or four years has been very irregular, but it is undoubtedly small-pox. If the disease occurred in an adult the presumption was that it was small-pox.

Dr. Booth.—May not the Board of health recommend that this careless mode of treating small-pox be discontinued? Let us get up a recommendation and try to stop this loose acting in our State. I am by the expert like I am by the Board of Censors: men who are competent to know have put him there. When he says a man has small-pox I am going to accept it as small-pox.

Dr. S.W. Battle.–I think it will be conceded that we have in this country a disease closely resembling small-pox and if it is small-

pox it is a mild form. I believe Dr. Anderson is thoroughly conscientious, but I move that we get at the sentiment of this body as to whether it is reasonable to think that Wilson county would be immune from this disease that prevails over this State and the United States.

Dr. R. H. Lewis.—I think the proper thing to do will be to put a foot-note at the bottom of the tabulated statement. Print Dr. Anderson's letter to me and print the opinion of the expert.

Dr. S. W. Battle.—I will say I do not think all discreet cases of small-pox have secondary fever. I think Osler says so.

Dr. Anderson.—I think he does not, sir.

Dr. Archie.—Some time in the early part of the year I found a man sitting on my doorsteps and I invited him in. He told me he had been to Lynchburg, Va., for two or three weeks, but there was no small-pox there. I told him to go immediately home and not to leave the house. He had a genuine case of discreet small-pox; father, mother, seven or eight brothers and sisters had it. Other cases, mild in type, were developed. There was no case that could have been mistaken for anything else than small-pox. He had secondary fever. We had Dr. Henry Long from Statesville, the small-pox expert. Dr. Anderson is in my opinion mistaken. I vaccinated the First North Carolina Regiment three times. I have seen the worst sort of arms, sores nearly to the bone and yet the vaccination had not taken.

Dr. Macon.—I would like to know if this disease which is spreading in North Carolina is not small-pox, what is it? It is a disagreeable disease and if it is not small-pox I think the people of the community should be quarantined anyhow. They may be used to scratching in the eastern part of North Carolina from the mosquitoes but we people in our high healthy mountains do not love to be scratching so much.

What is the opinion of the expert worth if it is not to be regarded? If he proclaims smallpox what are you going to do about it? If there is no law behind him backing him, take him out of the field and save the expense, and if there is a law let him enforce it.

It is the business man that objects to small-pox; he pats the

doctor on the shoulder and says, you will ruin our town. Take a stand promptly against these business people and they will be the first to come over and help you out. All discreet forms of small-pox do not have secondary fever. This disease should be exterminated from North Carolina, and can be done.

Dr. Anderson.—I want to say I had fourteen to sixteen placards of "Small-pox" nailed up all over the town for three months. I wrote the Secretary I did not think it was small-pox, but was doing it because the expert said so.

There are some people who are not much susceptible, have to be vaccinated several times before it will take. I reported that fact to the sanitary committee and they reported the fact to the State Board of Health and he wrote to them saying that we had it in our hands to manage that, but we have not.

Dr. Lewis.—You can, if you want to.

Dr. Booth.—The fine points about the diagnosis of small-pox are sometimes very pretty to talk about and very tiresome to listen to. There is an eruptive disease in North Carolina that whoever has it does not want to have it again. Vaccination prevents it; it has been proven that vaccination prevents it. I have very likely seen more small-pox than any man in North Carolina. I saw 7,000 cases in 1864-65. We have a much milder form of small-pox here than we had there in 1865. Still the characteristic symptoms are the same. We all know from the days of Jenner until now if vaccination had been properly resorted to small-pox would have been exterminated from the earth. There is a spirit of carelessness now existing among the doctors that is deplorable. I wanted to make a report to the county commissioners in my county about the various counties in North Carolina and Virginia and wrote to the different counties to get the statistics. From Durham I got the reply: When the disease made its appearance we established a pest house and a house of detention. We had to establish another house of detention, as the negroes exposed themselves in order to get fed.

We adopted this plan. When a man became a suspect we vaccinated him and kept our eye on him.

The great point the authors strain over is the last point.

There is not an author I can find anywhere that says they have a secondary fever.

Dr. Herring.—All this small-pox that we have had here the last few years was largely caught from negroes. Everybody knows that this disease we have been discussing and disturbing ourselves so much about has not been so terribly fatal as small-pox used to be. It may be because it comes from the negroes. All you gentlemen know that to catch syphilis from a negro woman does not hurt you as bad as to catch it from a white woman.

Dr. Battle.—I think the doctor has raised a very interesting point in regard to the racial origin of the disease. There is no doubt but that the disease in this country is largely here from the returning soldiers from Cuba and Porto Rico. The soldiers have gone to their homes and scattered it all over the country. It may be that this disease is mild because it was mild in Porto Rico and Cuba.

Dr. Archie.—All the soldiers of Cuba were thoroughly vaccinated before going to Cuba, again in Cuba and again on their return.

Dr. H. W. Lewis.—The classical symptoms of a great number of these cases are absent, nevertheless the consensus of opinion of men calculated to judge, men who have been trained, particularly marine hospital experts, is, that the disease is small-pox. Their opinion must be regarded, and we must of course look to some authority outside medical books.

The discussion was then closed and the following members were elected to serve on the Board of Health:

Dr. S. Westray Battle, of Asheville, 6 years.

Dr. H. W. Lewis, of Northampton, 6 years.

Dr. W. H. Whitehead, Rock Mount, 4 years.

Dr. John L. Nicholson, of Richlands, 4 years.

Dr. Lewis.—The Surgeon-General of the United States Army has sent out a letter asking inquiries as to leprosy. If any of the gentlemen come in contact with any disease which suggests leprosy he will help them in making the diagnosis. So far as I know there is no leprosy in this State.

The conjoint session then adjourned.

LIST OF MEMBERS.

[IN THE ORDER IN WHICH THEY SIGNED THE CONSTITUTION.]

Members will confer a great favor if they will look for any errors or omissions, changes, removals, or deaths in this list, and mail the Secretary a card of correction. With the co-operation of the members it is possible to keep the list up to date.

1871	Dr.	W. I. Royster	Raleigh.
71	"	George Gillett Thomas	Wilmington.
1872	"	Francis Duffy	Newbern.
1873	"	A. G. Carr	Durham.
73	"	J. M. Hadley	LaGrange.
73	"	P. L. Murphy	Morganton.
1874	"	Jos. Graham	Charlotte.
74	"	W. H. Lilly	Concord.
74	"	T. D. Haigh	Fayetteville.
1875	"	L. J. Picot	Littleton.
75	"	W. H. Whitehead	Rocky Mount.
75	"	R. H. Speight	Wrendale.
1876	"	Henry Tull	Kinston.
76	"	J. D. McMillan	Lumberton.
1877	"	Geo. W. Long	Graham.
77	"	Geo. W. Graham	Charlotte.
77	"	Richard H. Lewis	Raleigh.
77	"	L. H. Hill	Germanton.
1878	"	R. J. Noble	Selma.
78	"	W. H. H. Cobb	Goldsboro.
78	"	I. W. Faison	Charlotte.
1879	"	J. G. Ector	Friendship.
79	"	J. M. Covington	Rockingham.
79	"	W. P. Beall	Greensboro.
79	"	A. D. McDonald	Wilmington.
79	"	S. B. Jones	Charlotte.
79	"	D. M. Prince	Laurinburg.
79	"	J. A. Sexton	Raleigh.
79	"	John C. Walton	Reidsville.
79	"	R. A. Hargrave	Robersonville.
79	"	Julian M. Baker	Tarboro.
79	"	Thos. E. Anderson	Statesville.
79	"	H. T. Trantham	Salisbury.

1880	Dr.	J. M. Stansill	Rockingham.
80	"	Thomas Hill	Goldsboro.
80	"	J. C. Shepard	Wilmington.
80	"	W. C. Galloway	Wilmington.
80	"	T. S. Burbank	Wilmington.
80	"	R. W. Thomas	Thomasville.
80	"	C. M. Poole	Craven.
80	"	J. L. Nicholson	Richlands.
80	"	A. W. Knox	Raleigh.
80	"	John Whitehead	Salisbury.
80	"	S. J. Montague	Winston.
80	"	L. W. Hunter	Sardis.
1881	"	B. F. Whiteside	Hickory.
81	"	J. A. Reagan	Weaverville.
81	"	G. W. Fletcher	Fletchers.
81	"	M. H. Fletcher	Asheville.
81	"	T. M. Jordan	Raleigh.
81	"	R. L. Payne	Norfolk, Va.
81	"	T. F. Meisenheimer	Morven.
81	"	T. F. Pharr	Concord.
81	"	H. B. Weaver	Asheville.
81	"	J. H. Williams	Asheville.
81	"	W. D. Hilliard	Asheville.
1882	"	J. R. Irwin	Charlotte.
82	"	E. R. Wilson	Greensboro.
82	"	K. P. Battle, Jr.	Raleigh.
82	"	R. S. Young	Concord.
82	"	R. A. Smith	Goldsboro.
82	"	C. A. Misenheimer	Charlotte.
1883	"	W. W. Faison	Goldsboro.
83	"	J. A. Stevens	Clinton.
83	"	I. M. Taylor	Morganton.
83	"	J. M. Hodges	LaGrange.
83	"	W. L. Hudson	Dunn.
83	"	F. R. Harriss	Henderson.
83	"	G. C. Edwards	Hookerton.
83	"	E. M. Summerell	Mill Bridge.
83	"	N. M. McLean	Gibson Station.
83	"	B. L. Long	Hamilton.
83	"	N. P. Boddie	Durham.
83	"	H. T. Bass	Tarboro.
83	"	Robert J. Gill	Henderson.
1884	"	W. G. Freeman	Murfreesboro.
84	"	W. C. Whitfield	Quinerly.
84	"	J. A. Burroughs	Asheville.
84	"	J. W. Long	Salisbury.

1884	Dr.	M. P. Perry	Macon.
84	"	G. J. Robinson	Smithfield.
84	"	M. R. Adams	Statesville.
84	"	G. T. Sikes	Grissom.
84	"	W. B. Pritchard	105W.73d stNY
84	"	M. H. Futrell	Conway.
84	"	B. F. McMillan	Plainview.
84	"	J. E. Grimsley	Snow Hill.
84	"	T. W. Long	Catawba.
84	"	G. W. Purefoy	Asheville.
1885	"	L. M. Archey	Concord.
85	"	W. E. Powell	Gastonia.
85	"	S. D. Booth	Oxford.
85	"	J. A. Hodges	Richmond, Va.
85	"	Annie L Alexander	Charlotte.
85	"	A. D. Cotten	Morrisville.
85	"	K. Leggett	Hobgood.
85	"	W. W. Pharr	Newell's.
85	"	J. M. Faison	Faison.
85	"	J. W. McGee	Raleigh.
85	"	H. W. Dorsett	Bethany.
85	"	D. G. Caldwell	Concord.
85	"	J. M. O'Kelly	Williams' Mills
85	"	M. F. Fox	Gilmers' Store.
85	"	J. B. Carr	Old Sparta.
85	"	W. T. Pate	Gibson Station.
85	"	D. T. Tayloe	Washington.
85	"	Zeno Brown	Greenville.
85	"	F. W. Ritter	Moyock.
85	"	Mayland Bolton	Rich Square.
1886	"	G. H. Dodd	Clayton.
86	"	B. S. Utley	Holly Springs.
86	"	R. A. Whitaker	Trenton.
86	"	M. W. Harper	Dunn.
86	"	H. H. Harriss	Wake Forest.
86	"	M. E. Robinson	Goldsboro.
86	"	H. H. Dodson	Milton.
86	"	Joel Hill	Lexington.
1887	"	O. D. King	Albemarle,
87	"	W. D. Pemberton	Monroe.
87	"	A. W. Goodwin	Raleigh.
87	"	W. H. Bagwell	Greenville.
87	"	H. W. Lewis	Jackson.
87	"	D. O'Donoghue	Charlotte.
87	"	Henry H. Dodson	Milton.
87	"	S. W. Battle, U. S. N	Asheville.

1887	Dr.	J. F. Beall	Linwood.
87	"	J. Howell Way	Waynesville.
87	"	R. H. Stancell	Marg'ttesville.
87	"	R. A. Patterson.	Aurelian Spgs.
87	"	J. McDeArmond	Mint Hill.
87	"	R. J. Brevard	Charlotte.
87	"	E. C. Register	Charlotte.
87	"	J. D. Croom	Maxton.
87	"	D. C. Parris	Hillsboro.
87	"	R. H. Winborne	Barnitz.
1888	"	J. A. Faison	Ben'ttsv'le, S.C.
88	"	A. McDougald	Hope Mills.
88	"	W. J. Lumsden	Elizabeth City.
88	"	G. H. Moran	Morganton.
88	"	N. B. Herring	Wilson.
88	"	H. S. Lott	Winston.
88	"	Jas. W. McGee, Jr.	Raleigh.
88	"	T. P. Wynn	Tarboro.
88	"	S. A. Henly	Asheboro.
88	"	W. A. Monroe	Sanford.
88	"	W. S. Anderson	Wilson.
88	"	J. G. Broadnax	Greensboro.
88	"	F.T.Meriwether, U.S.A.ret.	Asheville.
88	"	J. R. McLelland	Mooresville.
88	"	G. W. Lewis	Fremont.
88	"	J. B. Robertson	Clayton.
88	"	Thos. Stamps	LumberBridge.
88	"	J. E. Ashcraft	Monroe.
88	"	C. H. Lewis	Farmers.
88	"	E. B. Goelet	Saluda.
88	"	B. T. Cox	Redalia.
88	"	A. Cheatham	Durham.
1889	"	J. T. J. Battle	Greensboro.
89	"	Oscar McMullan	Elizabeth City.
89	"	Albert Anderson	Wilson.
1890	"	W. G. Stafford	Burlington.
90	"	J. S. Lafferty	Concord.
90	"	T. L. Booth	Oxford.
90	"	J. H. Marsh	Fayetteville.
90	"	P. B. Loftin	Grifton.
90	"	R. L. Gibbon	Charlotte.
90	"	W. A. Graham	Charlotte.
90	"	J. L. Ray	Burnsville.
90	"	W. H. Harrell	Williamston.
90	"	J. L. Egerton	Hendersonville
90	"	J. W. White	Wilkesboro.

1890	Dr.	E. G. Moore	Elm City.
90	"	E. P. Snipes	Jonesboro.
90	"	E. C. Laird	Hot Springs.
90	"	J. P. Munroe	Davidson.
90	"	R. D. Jewett	Winston.
90	"	W. H. Cobb, Jr	Goldsboro.
90	"	John Sweany	Leaksville.
1891	"	C. P. Ambler	Asheville.
91	"	R. C. Ellis	Shelby.
91	"	J. B. H. Knight	Williamston.
91	"	J. G. Waldrop	Hendersonville
91	"	W. F. Chenault	Elmwood.
91	"	C. G. Nichols	Roxboro.
91	"	Richard H. Whitehead	Chapel Hill.
91	"	Jos. L. Laxton	Morganton.
91	"	Karl von Ruck	Asheville.
91	"	D. A. Stanton	High Point.
91	"	Jas. A. Turner	High Point.
91	"	J. F. Sanderford	Creedmore.
91	"	D. I. Watson	Southport.
91	"	W. E. Headen	Morehead City.
91	"	J. A. Watson	Asheville.
91	"	J. C. Black	Pioneer Mills.
91	"	R. W. Palmer	Gulf.
91	"	W. P. Ivey	Lenoir.
1892	"	E. L. Cox	Jacksonville.
92	"	W. J. Harrell	Aulander.
92	"	R. W. Mills	Troutman's.
92	"	Wade H. Atkinson	Wash'gt'n, D.C
92	"	Silas P. Wright	Wilmington.
92	"	K. A. Blue	Laurinburg.
92	"	H. Johnson	Grifton.
92	"	A. J. Patterson	Liberty.
92	"	F. P. Gates	Manteo.
92	"	W. R. Mayo	Jamesville.
92	"	C. B. Ingram	Mt. Gilead.
92	"	T. S. McMullan	Hertford.
92	"	J. B. Shamberger	Star.
92	"	E. G. Goodman	El Paso.
1893	"	T. B. Williams	Ridgeway.
93	"	G. M. Bell	Wakefield.
93	"	T. A. Matthews	Castalia.
93	"	F. H. Seawell	Emit.
93	"	R. J. Nelson	Robersonville.
93	"	Albert Houck	Lenoir.
93	"	U. S. Hassell	Plymouth.

1893	Dr.	J. M. Flippin	Salisbury.
93	"	C. A. Julian	Thomasville.
93	"	Jas. F. Rieves	Julian.
93	"	W. H. Wakefield	Charlotte.
93	"	J. F. Highsmith	Fayetteville.
93	"	E. F. Strickland	Bethania.
93	"	M. F. Morphew	Marion.
93	"	H. C. Williams	Sanford.
93	"	R. A. Moore	Durham.
93	"	R. L. Davis	Sylva.
93	"	W. H. Nicholson	Louisburg.
93	"	Robt. J. Gill	Henderson.
93	"	J. G. Blount	Washington.
93	"	J. H. Gibbon	Philadelp'a,Pa.
93	"	M. L. Stevens	Asheville.
93	"	C. N. Roberson	Ascend.
1894	"	J. R. Gordon	Jamestown.
94	"	C. O'H. Laughinghouse	Greenville.
94	"	J. R. Hester	Prospect Hill.
94	"	W. W. McKenzie	Salisbury.
94	"	W. L. Taylor	Mt Airy.
94	"	J. H. Mease	Canton.
94	"	J. H. Jenkins	Crisp.
94	"	C. L. Jenkins	Raleigh.
94	"	C. L. Gilmer	Greensboro.
94	"	L. D. Wharton	Smithfield.
94	"	O. B. Stroud	Ore Hill.
94	"	J. D. Edwards	Siler City.
94	"	W. T. Steele	Mt. Olive.
94	"	C. E. Walker	Huntersville.
94	"	W. J. Vestal	Tyro Shops.
94	"	Jno. E. Logan	Greensboro.
94	"	W. J. Jones, Jr	Wilson.
94	"	A. A. Kent	Lenoir.
94	"	A. H. Harris	Wilmington.
94	"	W. O. Spencer	Yanceyville.
94	"	J. A. Myers	Lexington.
94	"	A. J. Crowell	Charlotte.
94	"	G. M. Ivie	Stoneville.
94	"	G. R. Hughes	Pollocksville.
94	"	D. J. Hill	Lexington.
94	"	G. A. Smith	Siler City.
1895	"	F. H. Russell	Wilmington.
95	"	W. E. Murphy	Carr.
95	"	W. D. Bowen	Bath
95	"	Geo. H. West	Newton.

1895	Dr.	W. L. Kirkpatrick	Crab Tree.
95	"	W. T. Turlington	Fremont.
95	"	J. S. Brown	Salisbury.
95	"	R. S. McGeachy	Raleigh.
95	"	C. E. Moore	Wilson.
95	"	H. A. Royster	Raleigh.
95	"	J. C. Montgomery	Charlotte.
95	"	Joseph Dixon	Ayden.
95	"	B. W. West	Eureka.
95	"	Jno. Thames	Greensboro.
95	"	J. C. Rodman	Washington.
95	"	Claude M. Jones	Grimesland.
95	"	B. L. Ashworth	Marion.
1896	"	Ab. Alexander	Columbia.
96	"	Geo. Doughton	N. Wilkesboro.
96	"	C. C. Jackson	Plymouth.
96	"	W. C. Brownson	W. Asheville.
96	"	J. M. Turner	Wilkesboro.
96	"	Fred. L. Potts	Vanceboro.
96	"	Chas. W. Mosley	Elkin.
96	"	W. T. Holt	Donnahu.
96	"	A. Y. Linville	Salem.
96	"	Goode Cheatham	Henderson.
96	"	James M. Parrott	Kinston.
96	"	Jos. W. Kornegay	Mt. Olive.
96	"	F. H. Holmes	Clinton.
96	"	E. Fulp	Fulp.
96	"	J. E. McLauchlin	Cool Spring.
96	"	John Bynum	Winston.
96	"	Chas. B. McAnally	Madison.
96	"	G. W. Pressly	Charlotte.
96	"	W. K. Reid	Pineville.
96	"	W. H. Crowell	Whiteville.
96	"	Carl V. Reynolds	Asheville.
96	"	W. G. Sutton	Winston.
96	"	D. N. Dalton	Winston.
96	"	T. E. Asbury	Asbury.
96	"	T. S. Faucette	Burlington.
96	"	E. E. Klutz	Troutman.
96	"	Anna M. Gove	Greensboro.
96	"	Thos. B. Ashby	Mt. Airy.
96	"	B. E. Reeves	Lamar.
96	"	J. R. Reitzel	High Point.
96	"	Chas. L. Summers	Winston.
96	"	J. B. Smith	Pilot Mountain
1896	"	J. W. Rodwell	Cana.

1897	Dr.	F. M. Clarke	Beaufort.
97	"	H. L. Baird	Asheville.
97	"	R. S. Primrose	Newbern.
67	"	Clara E. Jones	Goldsboro.
97	"	G. A. Coggeshall	Oxford.
97	"	Chas. J. Sawyer	Belcross.
97	"	E. A. Moye	Greenville.
97	"	B. K. Hays	Oxford.
97	"	J. W. Duguid	Dover.
97	"	J. H. Pool	South Mills.
97	"	Thos. F. Costner	Lincolnton.
97	"	L. P. Aaron	Mt. Olive.
97	"	N. G. Moore	Pineville.
1898	"	Clarence Porter Jones	Benson.
98	"	George A. Ramsaur	China Grove.
98	"	L. E. Ricks	Parmele.
08	"	C. C. Champion	Mooresboro.
98	"	R. J. Teague	Roxboro.
98	"	T. E. McBrayer	Shelby.
98	"	G. S. Tenant	Asheville.
98	"	Eug. B. Glenn	Asheville.
98	"	Chas. L. Minor	Asheville.
98	"	W. E. Hemphill	Arden.
98	"	G. A. Brown	Bear Poplar.
98	"	Jas. R. Alexander	Lowesville.
98	"	Sam'l McK. Crowell	Madge.
98	"	J. W. P. Smithwick	LaGrange.
98	"	Joy Harris	Burlington.
98	"	D. P. Whitley	Millingpost.
98	"	H. N. Abernathy	Denver.
98	"	S. F. Pfohl	Salem.
98	"	J. A. Williams	Prospect Hill.
98	"	J. M. Blair	Monroe.
98	"	W. M. Fowlkes	Rockingham.
98	"	E. R. Russell	Charlotte.
98	"	J. D. Williams	Lewisville.
98	"	W. R. McCain	McCain's.
98	"	W. H. Wooten	Davidson.
98	"	E. H. Spainhower	Jolliet.
98	"	L. A. Crowell	Crimsic.
98	"	Geo. D. Everington	Lauringburg.
98	"	James R. Parker	Menola.
98	"	C. M. Strong	Charlotte.
98	"	J. F. Stewart	Simpson'sStore
98	"	R. E. Jenkins	Belmont.
1898	"	F. L. Long	Catawba.

98	Dr.	J. E. Kerr	Lilesville.
98	"	W. J. Jones	Outlaw's B'dge
98	"	Jno. T. Burrus	Jonesville.
98	"	John E. S. Davidson	Huntersville.
98	"	S. P. Woody	Spring Creek.
98	"	S. T. Flippin	Siloam.
98	"	R. L. Rierson	Elks.
98	"	S. A. Stephens	Monroe
98	"	F. H. Gilreath	Moravian Falls.
98	"	W. A. Rogers	Franklin.
98	"	J. I. Campbell	Wadesboro.
98	"	E. C. Boyte	Mount Holly.
98	"	W. P. Knight	Oak Ridge.
98	"	Chas. Highsmith	Parkersburg.
98	"	O. P. Schaub	Culler.
98	"	Jno. B. Ray	Leaksville.
98	"	J. W. McPherson	Liberty.
98	"	Herbert B. Thomas	Newbern.
98	"	James R. Campbell	Newton.
98	"	Chas. S. Mangum	Chapel Hill.
98	"	W. Sinclair Davidson	Triangle.
1899	"	Thos. P. Cheesborough	Asheville.
99	"	W. C. Daniel	Adoniram.
99	"	B. Ray Browning	Littleton.
99	"	J. E. Moore	Sandy Mush.
99	"	J. A. Morris	Wilton.
99	"	E. R. Morris	Asheville.
99	"	C. A. Anderson	Burlington.
99	"	A. S. Pendleton	Warrenton.
99	"	D. E. Sevier	Asheville.
99	"	James Sawyer	Asheville.
99	"	J. F. Abell	Canton.
99	"	A. M. Bennett	Bryson City
99	"	J. T. Sevier	Asheville.
99	"	Earl Grady	Tryon.
99	"	H. C. Menzies	Hickory.
99	"	Chas. S. Jordon	Asheville.
99	"	Frank G. Wilson	Gastonia.
99	"	B. R. Graham	Wallace.
99	"	G. P. Reid	Old Fort.
99	"	Chas. L. Pearson	Asheville.
99	"	John H. Woodcock	Asheville.
99	"	J. B. Matthews	Pittsboro.
99	"	R. L. Allen	Waynesville.
99	"	Geo. J. Gouger	Tulin.
99	"	W. J. McAnally	High Point.

1899	Dr.	John D. McRae	Fayetteville.
99	"	J. F. Peavy	Asheville.
99	"	T. L. Brooks	Black Creeks.
99	"	Wm. Fountain	Leggett.
99	"	Thomas Stringfield	Waynesville.
99	"	J. M. Newbern	Powell's Point.
99	"	L. B. McBrayer	Asheville.
99	"	John McCampbell	Morganton.
99	"	G. M. Van Poole	Craven.
99	"	Jos. P. Whitehead	Rocky Mount.
99	"	W. O. Nisbet	Charlotte.
99	"	Jno. B. Wright	Granite Falls.
99	"	Walter C. Lauderdale	Asheville.
99	"	H. McK. Tucker	Raleigh.
99	"	R. T. S. Steele	Rockingham.
99	"	H. M. S. Cason	Edenton.
99	"	Charles VanBergen	Asheville.
99	"	D. A. Garrison	Bessemer City.
99	"	S. H. Crocker	Moyeton.
99	"	J. Warren Achorn	Boston, Mass.
99	"	R. F. Yarborough	Louisburg.
99	"	Thos. W. Davis	Louisburg.
99	"	A. Miller Whisnant	Caroleen.
99	"	R. Hicks	Henrietta.
99	"	W. E. Miller	Burlington.
99	"	H. F. Long	Statesville.
99	"	J. R. Pope	Scotland Neck.
99	"	W. H. Ward	Plymouth.
99	"	W. P. Whittington	Asheville.
1900	"	W. N. Tate	Mebane.
00	"	H. Hartwell Bass	Henderson.
00	"	E. F. Corbell	Sunbury.
00	"	S. E. Koonce	Pollocksville.
00	"	L. L. Staton	Tarboro.
00	"	E. J. Buchanan	Lexington.
00	"	R. E. Lee	Clinton.
00	"	W. W. Dawson	Grifton.
00	"	R. P. Morehead	Lasker.
00	"	A. R. Winston	Franklinton.
00	"	Raymond Pollock	Kinston.
00	"	Isaac W. Lamm	Lucama.
00	"	E. Delia D. Carroll	Raleigh.
00	"	Sallie Borden	Goldsboro.
00	"	Edmund Harrison	Greensboro.
00	"	Wade H. Bynum	Germanton.
00	"	J. B. Person, Jr	Selma.

1900	Dr.	E. T. Dickinson	Smithfield.
00	"	J. R. Palmer	Hookerton.
00	"	W. L. Dunn	Asheville.
00	"	L. Harrell	Statesville.
00	"	Paul Paquin	Asheville.
00	"	J. E. Patrick	Institute.
00	"	J. C. Wessell	Wilmington.
00	"	E. J. Nixon	Wilmington.
00	"	A. C. Hoyt	Washington.
00	"	J. W. Taylor	Union.
00	"	J. W. Wood	Scotland Neck.
00	"	B. F. Halsey	Roper.
00	"	C. F. Griffin	Woodland.
1901	"	Clyde C. Cotton	Black Mount'n.
01	"	E. B. Meadow	Oxford.
01	"	J. H. Manning	Rocky Mount.
01	"	C. D. Jones	Hillsboro.
01	"	W. T. Parrott	Kinston.
01	"	Edward Baum	Greensboro.
01	"	Watson S. Rankin	Erskine.
01	"	Wm. J. Thigpen	Tarboro.
01	"	W. P. Holt	Williardsville.
01	"	Wm. A. Graham	Durham.
01	"	Chas. Roberson	Greensboro.
01	"	B. S. Herring	Wilson.
01	"	R. H. Speight, Jr	Wrendale.
01	"	W. F. Hargrove	Tarboro.
01	"	W. H. Dixon	Edward.
01	"	Hoagland C. Davis	Fayetteville.
01	"	G. M. Maxwell	Davidson.
01	"	R. L. Halloway	Durham.
01	"	C. A. Adams	Durham.
01	"	James M. Judd	Sippahaw.
01	"	P. J. Macon	Warrenton.
01	"	R. E. L. Flippin	Pilot Mount'n.
01	"	P. A. Nichols	Washington.
01	"	W. V. Hicks	Durham.
01	"	Geo. W. Landis	Durham.
01	"	J. M. Kelly	Durham.
01	"	C. W. Banner	Greensboro.
01	"	Jno. M. Manning	Durham.
01	"	Jno. L. Moore	Apex
01	"	H. Brantley	Spring Hope.
01	"	W. T. Griggs	Poplar Branch.
01	"	Z. T. Brooks	Durham.
01	"	Wm. P. Swett	So. Pines.

1901	Dr.	Wm. J. Moon	Asheboro.
01	"	W. D. Young	Durham.
01	"	E. M. Brown	Washington.
01	"	J. Ernest Stokes	Salisbury.
01	"	Thos. M. White	Belvidere.
01	"	H. G. Utley	Maxton.
01	"	J. H. Duke, Jr	Asheville.
01	"	F. O. Rogers	Concord.

HONORARY FELLOWS.

DATE OF SIGNING CONSTITUTION.			AT SESSION OF
1887	Dr.	J. M. Lawing, Lincolnton	1891
1855	"	J. G. Ramsay, Salisbury	83
55	"	Peter E. Hines, Raleigh	98
1895	"	Eugene Grissom, Pueblo, Colorado	98
1860	"	W. J. Jones, Goldsboro	98
60	"	J. W. Jones, Tarboro	98
60	"	J. K. Ruffin, Wilson	98
1896	"	P. A. Barrier, Mt. Pleasant	98
67	"	J. F. Shaffner, Salem	98
68	"	F. J. Haywood, Raleigh	98
68	"	B. P. Alston, Henderson	98
66	"	H. T. Bahnson, Salem	1900
1870	"	W. W. Lane, Wilmington	00
70	"	Wm. J. Love, Wilmington	00
70	"	Jas. McKee, Raleigh	00
70	"	Willis Alston, Littleton	00
70	"	W. J. H. Bellamy, Wilmington	00
1887	"	J. F. Beall, Linwood	00

HONORARY MEMBERS.

Dr. L. McL. Tiffany	Baltimore, Md.
Dr. W. T. Howard	Baltimore, Md.
Dr. W. W. Keen	Philadelphia.
Dr. W. L. Robinson	Danville, Va.
Dr. J. Allison Hodges	Richmond, Va.

LIST OF MEMBERS.

[ALPHABETICALLY ARRANGED.]

Members marked thus * were present at the last meeting.

*Aaron, L. P.	Mt. Olive	1897
Abel, J. F.	Canton	1899
Abernathy, H. N.	Denver	1898
Achorn, J. Warren	Boston, Mass.	1899
*Adams, M. R.	Statesville	1884
*Adams, C. A.	Durham	1901
Alexander, Ab.	Columbia	1896
Alexander, Annie L.	Charlotte	1885
Alexander, J. R.	Lowesville	1898
Allen, R. L.	Waynesville	1899
Alston, P. B.	Henderson	1868
Alston, Willis	Littleton	1870
Ambler, C. P.	Asheville	1891
*Anderson, Albert	Wilson	1889
Anderson, C. A.	Burlington	1899
*Anderson, T. E.	Statesville	1879
*Anderson, W. S.	Wilson	1888
*Archey, L. M.	Concord	1858
Asbury, F. E.	Asbury	1896
Ashby, Thos. B.	Mt. Airy	1896
Ashcraft, J. E.	Monroe	1888
Ashworth, B. L.	Marion	1895
Atkinson, W. H.	707 12th St., N. W Wash'gton, D. C.	1892
Bagwell, W. H.	Greenville	1887
*Bahnson, H. T.	Salem	1869
Baird, H. L.	Asheville	1897
*Baker, Julian M.	Tarboro	1879
*Banner, C. W.	Greensboro	1901
Barrier, P. A.	Mt. Pleasant	1861
*Bass, H. T.	Tarboro	1883
*Bass, H. Hartwell	Henderson	1900
*Batttle, J. T. J.	Greensboro	1889
*Battle, K. P., Jr.	Raleigh	1889
*Battle, S. W.	Asheville	1887
*Baum, Edward	Greensboro	1901

Beall, J. F.	Linwood	1887
Beall, W. P.	Greensboro	1879
Bellamy, W. J. H.	Wilmington	1870
*Bell, G. M.	Wakefield	1893
Bennett, A. M.	Bryson City	1899
Best, B. W.	Eureka	1895
Black, J. C.	Pioneer Mills	1891
Blair, J. M.	Monroe	1898
Blunt, J. C.	Washington	1893
Blue, K. A.	Laurinburg	1892
*Boddie, N. P.	Durham	1883
*Bolton, Maryland	Rich Square	1885
Boyte, E. C.	Mount Holly	1898
*Booth, S. D.	Oxford	1885
Booth, T. L.	Oxford	1890
Borden, Sallie	Goldsboro	1900
Bowen, W. D.	Bath	1896
*Brantly, H.	Spring Hope	1901
Brevard, R. J.	Charlotte	1887
Broadnax, J. G.	Greensboro	1888
Brooks, T. L.	Black Creek	1899
*Brooks, L. T.	Durham	1901
Brown, G. A.	Bear Poplar	1898
Brown, J. S.	Salisbury	1895
Brown, Zeno	Greenville	1885
*Brown, E. M.	Washington	1901
*Browning, B. Ray	Littleton	1899
Brownson, W. C.	West Asheville	1896
Buchanan, E. J.	Lexington	1900
Burbank, T. S.	Wilmington	1880
*Burroughs, J. A.	Asheville	1889
Burrus, J. T.	Jonesville	1898
Bynum, Jno.	Winston	1896
Bynum, Wade H.	Germanton	1900
Caldwell, D. G.	Concord	1885
Campbell, J. I.	Wadesboro	1898
Campbell, James R.	Newton	1898
*Carr, A. G.	Durham	1873
Carr, J. B.	Old Sparta	1885
Cason, H. M. S.	Edenton	1899
Champion, C. C.	Mooresboro	1898
*Cheatham, A.	Durham	1888
Cheatham, Goode	Henderson	1896
Cheeseborough, Thos. P.	Asheville	1899
Chenault, W. F.	Elmwood	1891
Clarke, F. M.	Beaufort	1897

Cobb, W. H., Jr.	Goldsboro	1880
Cobb, W. H. H.	Goldsboro	1878
*Coggeshall, G. A.	Oxford	1897
*Corbell, E. F.	Sunbury	1900
Costner, Thos. F.	Lincolnton	1897
*Cotton, A. T.	Morrisville	1885
*Cotton, Clyde C.	Black Mountain	1901
Covington, J. M.	Rockingham	1879
*Cox, B. T.	Redalia	1888
Cox, E. L.	Jacksonville	1892
Crocker, S. H.	Moyeton	1899
Croom, J. D.	Maxton	1887
Crowell, A. J.	Charlotte	1894
Crowell, L. A.	Crimsic	1898
Crowell, Sam'l McK.	Madge	1898
Crowell, W. H.	Whiteville	1896
Dalton, D. N.	Winston	1896
Daniel, W. C.	Adoniram	1899
Davidson, John E. S.	Huntersville	1898
Davidson, W. Sinclair	Triangle	1898
Davis, R. L.	Sylva	1893
*Davis, Thos. W.	Louisburg	1899
*Davis, H. C.	Fayetteville	1901
Dawson, W. W.	Grifton	1900
DeArmond, J. Mc.	Mint Hill	1887
*Dixon, Joseph	Ayden	1895
*Dickinson, E. T.	Smithfield	1900
*Dixon, E. Delia	Raleigh	1900
*Dixon, W. H.	Edward	1901
*Dodson, H. H.	Milton	1886
Dorsett, H. W.	Bethany	1885
Doughton, Geo.	North Wilkesboro	1896
*Duffy, Francis	Newbern	1872
Duguid, J. W.	Dover	1897
*Duke, J. H., Jr.	Asheville	1901
Dunn, W. L.	Asheville	1900
Ector, J. G.	Friendship	1879
*Edwards, G. C.	Hookerton	1883
Edwards, J. D.	Siler City	1894
Egerton, J. L.	Hendersonville	1890
Ellis, R. C.	Shelby	1891
Everington, Geo. D.	Lauringburg	1898
Faison, I. W.	Charlotte	1878
*Faison, J. A.	Bennettsville, S. C.	1888
Faison, J. M.	Faison	1885
Faison, W. W.	Goldsboro	1883

Faucette, T. S.	Burlington	1896
Fletcher, G. W.	Fletchers	1881
*Fletcher, M. H.	Asheville	1881
Flippin, J. M.	Salisbury	1893
*Flippin, S. T.	Siloam	1898
*Flippin, R. E. L.	Pilot Mountain	1901
Fountain, Wm.	Leggett	1899
Fox, M. F.	Gilmer's Store	1885
Fowlkes, W. M.	Rockingham	1898
Freeman, W. G.	Murfreesboro	1884
Fulp, E.	Fulp	1896
Futrell, M. H.	Conway	1884
Galloway, W. C.	Wilmington	1880
*Garrison, D. A.	Bessemer City	1899
Gates, F. P.	Manteo	1892
Gibbon, John H.	Philadelphia	1893
Gibbon, R. L.	Charlotte	1890
*Gill, Robert J.	Henderson	1883
Gilmer, C. S.	Greensboro	1894
Gilreath, F. H.	Moravian Falls	1898
*Glenn, Eug. B.	Asheville	1898
Goelet, E. B.	Saluda	1881
*Goley, W. R.	Graham	1893
Goodman, E. G.	El Paso	1892
Goodwin, A. W.	Raleigh	1897
Gordon, J. R.	Jamestown	1894
Gouger, Geo. J.	Tulin	1899
Gove, Anna M.	Greensboro	1896
Grady, Earle	Tryon	1899
Graham, B. R.	Wallace	1899
Graham, Geo. W.	Charlotte	1877
Graham, Joseph	Charlotte	1874
Graham, W. A.	Charlotte	1890
*Graham, Wm. A.	Durham	1901
*Griffin, E. F.	Woodland	1900
*Griggs, W. T.	Poplar Branch	1901
Grimsley, J. E.	Snow Hill	1884
Grissom, Eugene	Pueblo, Col.	1859
Hadley, J. M.	LaGrange	1873
Haigh, T. D.	Fayetteville	1874
*Halloway, R. L	Durham	1901
*Hallsey, B. F.	Roper	1900
*Hargrave, R. H.	Robersonville	1879
*Hargrave, W. F.	Tarboro	1901
Harper, M. W.	Dunn	1886
*Harrell, W. H.	Williamston	1890

*Harrell, W. J	Aulander	1892
Harris, A. H	Wilmington	1894
*Harris, F. R	Henderson	1883
*Harris, H. H	Wake Forest	1886
Harris, Joy	Burlington	1898
*Harrison, Edmund	Greensboro	1900
*Harrell, L	Statesville	1900
Hassell, U. S	Plymouth	1893
*Hays, B. K	Oxford	1896
Haywood, F. J	Raleigh	1898
*Headen, W. E	Morehead City	1891
Hemphilll, W. E	Arden	1898
Henley, S. A	Asheboro	1888
*Herring, N. B	Wilson	1888
*Herring B. S	Wilson	1901
*Hester, J. R	Prospect Hill	1894
*Hicks, W. V	Durham	1901
Hicks, R	Henrietta	1899
Highsmith, Chas	Parkersburg	1898
Highsmith, J. F	Fayetteville	1893
*Hill, D. J	Lexington	1894
*Hill, Joel	Lexington	1886
*Hill, L. H	Germanton	1877
*Hill, Thomas	Goldsboro	1880
Hilliard, W. D	Asheville	1881
*Hines, P. E	Raleigh	1853
Hodges, J. A	LaGrange	1883
*Holmes, F. H	Clinton	1896
Holt, W. T	Donahu	1896
*Holt, W. P	Williardville	1901
Houck, Albert	Lenoir	1893
*Hoyt, A. C	Washington	1900
Hudson, W. L	Dunn	1894
Hughes, G. R	Pollocksville	1894
Hunter, L. W	Sardis	1880
Ingram, C. B	Mt. Gilead	1892
Irwin, J. R	Charlotte	1882
Ivie, G. M	Stoneville	1894
*Ivey, W. P	Lenoir	1891
Jackson, C. C	Plymouth	1894
Jenkins, C. L	Raleigh	1892
*Jenkins, J. D	Crisp	1894
Jenkins, R. E	Belmont	1898
Jewett, R. D	Winston	1890
Johnson, H	Grifton	1897
Jones Clara E	Goldsboro	1897

Jones, C. M.	Grimesland	1895
*Jones, Clarence Porter	Benson	1898
*Jones, J. W.	Tarboro	1860
Jones, S. B.	Charlotte	1879
Jones, W. J.	Goldsboro	1860
Jones, W. J.	Outlaw's Bridge	1898
Jones, W. J., Jr.	Wilson	1894
*Jones, C. D.	Hillsboro	1901
*Jordan, T. M.	Raleigh	1881
Jordan, Chas. S.	Asheville	1899
*Judd, J. M.	Sippahaw	1901
*Julian, C. A.	Thomasville	1893
*Kelly, J. M.	Durham	1901
*Kent, A. A	Lenoir	1894
Kerr, J. E.	Pee Dee	1898
King, O. D	Albemarle	1887
Kirkpatrick, W. L.	Crab Tree	1895
Klutz, E. E.	Troutman	1896
*Knight, J. B. H.	Williamston	1891
Knight, W. P.	Oak Ridge	1898
*Knox, A. W.	Raleigh	1880
*Koonce, S. E.	Pollocksville	1900
Kornegay, Jos. W.	Mt. Olive	1896
Lafferty, J. S.	Concord	1890
*Laird, E. C.	Hot Springs	1890
*Lamm, I. W.	Lucama	1900
*Landis, G. W.	Durham	1901
Lane, W. W.	Wilmington	1870
*Lauderdale, W. C.	Asheville	1899
*Laughinghouse, C. O'H.	Greenville	1894
Lawing, J. M.	Lincolnton	1887
Laxton, J. L.	Morganton	1891
*Lee, R. E	Clinton	1900
*Leggett, K	Hobgood	1885
*Lewis, C. H	Farmers	1888
*Lewis, G. W.	Fremont	1888
*Lewis, H. W	Jackson	1887
*Lewis, R. H.	Raleigh	1877
Lilly, W. H.	Concord	1874
*Linville, A. Y.	Salem	1896
Loftin, P. B	Grifton	1890
Logan, J. E.	Greensboro	1894
*Long, B. L.	Hamilton	1883
Long, F. L.	Catawba	1884
*Long, Geo. W.	Graham	1877
*Long, J. W.	Salisbury	1884

Long, T. W	Catawba	1884
Long, H. F	Statesville	1899
Lott, H. S	Winston	1888
Love, Wm. J	Wilmington	1870
Lumsden, W. J	Elizabeth City	1888
*Macon, P. J	Warrenton	1901
Mangum, C. S	Chapel Hill	1898
*Manning, J. H	Rocky Mount	1901
*Manning, J. M	Durham	1901
*Marsh, J. H	Fayetteville	1890
Matthews, J. B	Pittsboro	1899
*Mathews, T. A	Castalia	1895
Maxwell, G. M	Davidson	1901
Mayo, W. R	Jamesville	1892
*Meadows, E. B	Oxford	1901
Mease, G. A	Canton	1894
Meisenheimer, C. A	Charlotte	1882
*Meisenheimer, T. F	Morven	1881
Menzies, H. C	Hickory	1889
*Meriwether, F. T., U. S. A	Asheville	1888
*Miller, J. F	Goldsboro	1873
Miller, W. E	Burlington	1899
Mills, R. W	Troutman	1892
Minor, Chas. L	Asheville	1898
*Monroe, W. A	Sanford	1888
*Montague, S. J	Winston	1880
Montgomery, J. C	Charlotte	1895
*Moore, C. E	Wilson	1875
*Moore, Jno. L	Apex	1901
*Moore, Wm. J	Asheboro	1901
Moore, E. G	Elm City	1890
*Moore, R. A	Durham	1893
Moore, N. G	Pineville	1897
Moore, J. E	Sandy Mush	1899
Moran, G. H	Morganton	1888
Morphew, M. F	Marion	1893
Morris, E. R	Asheville	1899
Morris, J. A	Wilton	1899
Mosley, Chas. W	Elkin	1896
Morehead, R. P	Lasker	1900
*Moye, E. A	Greenville	1897
*Munroe, J. P	Davidson	1890
Murphy, P. L	Morganton	1873
Murphy, W. E	Carr	1895
*Myers, J. A	Lexington	1894
*MacRae, Jno. D	Fayetteville	1899

*McAnally, Wm. J	High Point	1899
*McAnally, Chas. B	Madison	1896
McBrayer, T. E	Shelby	1898
McBrayer, L. B	Asheville	1899
McCain, W. R	McCain's	1898
McCampbell, John	Morganton	1899
McDonald, A. D	Wilmington	1879
McDougald, A	Hope Mills	1888
McGeachy, R. S	Raleigh	1895
*McGee, J. W	Raleigh	1885
*McGee, J. W., Jr.,	Raleigh	1888
McKee, James	Raleigh	1870
*McKenzie, W. W	Salisbury	1894
McLelland, J. R	Mooresville	1895
McLauchlin, J. E	Cool Spring	1883
McLean, N. M	Gibson's Station	1888
*McMillan, B. F	Plain View	1884
McMillan, J. D	Lumberton	1876
*McMullan, Oscar	Elizabeth City	1889
*McMullan, T. S	Herttord	1892
McPherson, J. W	Liberty	1898
Nelson, R. J	Robersonville	1893
Newbern, J. M	Powell's Point	1899
*Nichol's, C. G	Roxboro	1891
*Nichols, P. A	Washington	1901
*Nicholson, J. L	Richlands	1880
Nicholson, W. H	Louisburg	1893
Nixon, E. J	Wilmington	1900
*Noble, R. J	Selma	1878
Nisbet, W. O	Charlotte	1899
O'Donoghue, D	Charlotte	1887
O'Kelly, J. M	Williams' Mill	1883
Palmer, R. W	Gulf	1891
Palmer, J. R	Hookerton	1900
Paquin, Paul	Asheville	1900
*Parker, Jas. R	Menola	1898
*Parris, D. C	Hillsboro	1887
*Parrott, James M	Kinston	1896
*Parrott, W. T	Kinston	1901
Pate, W. T	Gibson's Station	1885
Patrick, J. E	Institute	1900
Patterson, A. J	Liberty	1887
Patterson, R. A	Aurelian Springs	1887
*Payne, R. L	Norfolk, Va	1881
*Pendleton, A. S	Warrenton	1899
Pemberton, W. D	Monroe	1887

Pearson, Chas. L.	Asheville	1899
Peavy, J. F.	Asheville	1899
Perry, M. P.	Macon	1884
Person, J. B., Jr	Selma	1900
*Pfohl, S. F.	Salem	1898
Pharr, T. F.	Concord	1881
Pharr, W. W.	Newell	1885
*Picot, L. J.	Littleton	1875
*Pollock, Raymond	Kinston	1900
*Poole, C. M.	Craven	1880
Poole, G. M.	Craven	1899
Poole, J. H.	South Mills	1897
Pope, J. R.	Scotland Neck	1899
Potts, Fred L.	Vanceboro	1896
Powell, W. E.	Gastonia	1885
*Pressly, G. W.	Charlotte	1896
Primrose, R. S.	Newbern	1897
Prince, D. M.	Laurinburg	1879
*Pritchard, W. B.	105 W. 73d St. New York City	1884
Purefoy, G. W.	Asheville	1884
Ramsaur, George A.	China Grove	1898
Ramsay, J. G.	Salisbury	1855
*Rankin, W. S.	Erskine	1901
Ray, John B.	Leaksville	1898
Ray, J. L.	Burnsville	1890
Reagan, J. A.	Weaversville	1881
Reeves, B. E.	Lamar	1896
*Register, E. C.	Charlotte	1887
Reid, G. P.	Old Fort	1899
Reid, W. K.	Pineville	1896
Reitzel, J. R.	High Point	1896
Reynolds, Carl V	Asheville	1896
Ricks, L. E.	Parmele	1898
Rierson, R. L.	Elks	1898
Rieves, Jas. F.	Julian	1893
Ritter, F. W.	Moyock	1885
Roberson, C. N.	Ascend	1893
*Roberson, Chas.	Greensboro	1901
Robertson, J. B.	Clayton	1888
*Robinson, G. J	Smithfield	1884
Robinson, M. E.	Goldsboro	1886
Rodgers, W. A.	Franklin	1898
*Rodman, J. C	Washington	1895
Rodwell, J. W.	Cana	1896
*Rogers, F. O.	Concord	1901
*Royster, H. A.	Raleigh	1895

Royster, W. I.	Raleigh	1871
Ruck, Karl von	Asheville	1891
Ruffin, J. K.	Wilson	1860
Russell, E. R.	Charlotte	1898
Russell, F. H.	Wilmington	1895
*Sanderford, J. F.	Creedmore	1891
Sawyer, Chas. J.	Belcross	1897
Sawyer, James	Asheville	1899
*Schaub, O. P.	Culler	1898
Seawell, F. H.	Emit	1893
Sevier, J. T.	Asheville	1899
Sevier, D. E.	Asheville	1899
Sexton, J. A.	Raleigh	1878
Shaffner, J. F.	Salem	1867
Shamberger, J. B.	Star	1892
Shepard, J. C.	Wilmington	1880
*Sikes, G. T.	Grissom	1884
Smith, G. A.	Siler City	1894
*Smith, J. B.	Pilot Mountain	1896
Smith, R. A.	Goldsboro	1882
*Smithwick, J. W. P.	LaGrange	1898
Snipes, E. P.	Jonesboro	1890
Spainhower, E. H	Jolliet	1898
*Speight, R. H.	Wrendale	1875
*Speight, R. H., Jr.	Wrendale	1901
Spencer, W. O.	Yanceyville	1894
*Stafford, W. G.	Burlington	1875
Stamps, Thos.	Lumber Bridge	1888
Stancell, R. H.	Margarettsville	1887
Stansill, J. M.	Rockingham	1880
Stanton, D. A.	High Point	1891
Staton, L. L.	Tarboro	1900
Steele, W. T.	Mt. Olive	1894
Steele, J. A.	Rockingham	1899
Stevens, J. A.	Clinton	1883
Stevens, M. L.	Asheville	1893
Stevens, S. A.	Monroe	1898
Stewart, J. F.	Simpson's Store	1898
*Stokes, J. Earnest	Salisbury	1901
Strickland, E. F.	Bethania	1893
Springfield, Thomas	Waynesville	1899
Strong, C. M.	Charlotte	1898
Stroud, O. B.	Ore Hill	1894
*Summerell, E. M.	Mill Bridge	1883
Summers, Chas. L.	Winston	1896
Sutton, W. G.	Winston	1896

Sweaney, John	Leaksville	1890
Swett, Wm. P.	Southern Pines	1901
*Tate, W. N.	Mebane	1900
*Tayloe, D. T.	Washington	1885
Tayloe. J. W.	Union	1900
*Taylor, I. M.	Morganton	1883
Taylor, W. L.	Mt. Airy	1894
Teague, W. L.	Roxboro	1898
Tennent, G. S.	Asheville	1898
*Thames, John	Greensboro	1895
*Thigpen, Wm. J.	Tarboro	1901
*Thomas, Geo. Gillett	Wilmington	1871
Thomas, Robert B.	Newbern	1898
Thomas, R. W.	Thomasville	1880
Trantham, H. T.	Salisbury	1879
Tucker, H. McK.	Raleigh	1899
Tull, H. Mck.	Kinston	1876
Turlington, W. T.	Fremont	1892
Turner, J. A.	High Point	1891
Turner, J. M.	Wilkesboro	1896
*Utley, B. S.	Holly Springs	1886
*Utley, H. G.	Maxton	1901
VanBergen, Charles	Asheville	1899
Vestal, W. J.	Tyro Shops	1893
*Wakefield, W. H.	Charlotte	1893
Waldrop, J. G.	Hendersonville	1861
Walker, C. E.	Huntersville	1894
*Walton, J. C.	Reidsville	1879
Ward, W. H.	Plymouth	1900
Watson, D. I.	Southport	1891
Watson, J. A.	Asheville	1891
*Way, J. Howell	Waynesville	1887
*Weaver, H. B.	Asheville	1881
Wessell, J. C.	Wilmington	1900
West, G. H.	Newton	1894
Wharton, L. D.	Smithfield	1892
Whisnant, A. M.	Caroleen	1899
Whitaker, R. A.	Trenton	1889
White, Thos. M.	Belvidere	1901
Whitehead, John	Salisbury	1880
*Whitehead, W. H	Rocky Mount	1875
*Whitehead, R. H.	Chapel Hill	1898
Whitehead, J. P.	Rocky Mount	1899
White, J. W.	Wilkesboro	1890
Whiteside, R. F.	Hickory	1881
*Whitfield, W. C	Quinerly	1884

Whitley, D. P	Millingpost	1898
Whittington, W. P	Asheville	1897
Williams, H. C	Sanford	1893
Williams, J. H	Asheville	1881
*Williams, J. A	Prospect Hill	1898
Williams, J. D	Lewisville	1898
*Williams, T. B	Ridgeway	1893
Wilson, A. R	Greensboro	1882
Wilson, F. G	Gastonia	1899
Winston, A. R	Franklinton	1900
Wood, J. H	Scotland Neck	1900
Woodcock, J. H	Asheville	1899
Woody, S. P	Spring Creek	1898
Wooten, W. H	Davidson	1898
Wright, S. P	Wilmington	1892
*Wright, J. B	Granite Falls	1899
*Wynn, T. P	Tarboro	1888
Yarborough, R. F	Louisburg	1899
*Young, R. S	Concord	1882
*Young, W. D	Durham	1901

IN MEMORIAM.

A. J. Battle.
W. T. Cheatham.
D. A. Roberson.
S. J. Love.
C. J. O'Hagan.
Geo. L. Kirby.
Hunter McGuire.
L. A. Sayre.
N. L. Sievers.
S. L. Montgomery.
W. O. McDowell.
W. R. Hollingsworth.
E. H. Sugg.

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